



EDV-9300 / 9500

RMT-164

SERVICE MANUAL

US Model
EDV-9500

Canadian Model
EDV-9300



This photo is EDV-9500.

ED Beta

711B2 CHASSIS

SPECIFICATIONS

System

Video recording system
Audio recording system

Rotary two-head helical scanning
Beta hi-fi system (2 channels)
(Recording on the conventional audio track is monaural.)

Video signal
Usable cassettes

EIA standard, NTSC color
Cassettes having the mark **ED Beta** or **B**
B I / B IS: 4.0 cm/sec. (only for playback)

Maximum recording time

B II: 2.0 cm/sec.
B III: 1.33 cm/sec.
ED Beta format
B I: 2 hours
B III: 3 hours
(with Sony EL-500 cassette)
B format
B II: 3 hours 20 min.
B III: 5 hours
(with Sony L-830 cassette)

Fast-forward and rewind time

Approx. 3½ min. (L-500)

Audio frequency response

Beta hi-fi, MPX FILTER OFF:
20 – 20,000 Hz

Wow and flutter

Beta hi-fi
Below measurable limit

Dynamic range

Beta hi-fi
More than 90 dB

Tuner section

Channel coverage

VHF channels 2 to 13
UHF channels 14 to 69
CATV channels 1 to 125
Channel 3 or 4 (selected)

VHF output signal

75 ohms, unbalanced
75 ohm antenna terminal for
VHF/UHF

Antenna

Inputs and outputs

LINE IN 1 and 2

VIDEO/PCM (phono jack) (1 each)

Input signal: 1 Vp-p, 75 ohms,
unbalanced, sync negative
S VIDEO (4-pin mini-DIN) (1 each)

LINE IN 2 S VIDEO:
automatically selected
LINE IN 1 S VIDEO: selectable with
V INPUT SELECT switch

Luminance signal: 1 Vp-p, 75 ohms,
unbalanced, sync negative

Chrominance signal: 0.286 Vp-p,
75 ohms, unbalanced

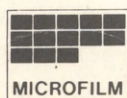
AUDIO (gold plated phono jack)
(2 each)

Input level: – 10 dBs
(0 dBs = 0.775 Vrms)

Input impedance: more than
47 kilohms

—Continued on next page—

Beta
B ED BETA VIDEO CASSETTE RECORDER
SONY®



LINE OUT 1 and 2 VIDEO/PCM (phono jack) (1 each)
 Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
 S VIDEO (4-pin mini-DIN) (1 each)
 Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
 Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced
 AUDIO (gold plated phono jack) (2 each)
 Standard output: -10 dBs at load impedance 47 kilohms
 Output impedance: less than 10 kilohms
 CONTROL L 5-pin DIN (1)
 CONTROL T Stereo minijack (1)
 CONTROL S IN Minijack (1)
 CONTROL S OUT Minijack (1)
 CAMERA REMOTE IN Special minijack (1)
 CAMERA REMOTE OUT (EDIT) Special minijack (1)
 Microphone input Minijack (1)
 -60 dBs, for low-impedance microphone
 HEADPHONES jack Stereo minijack (1)
 -26 dBs, 8 ohms

Timer section

Clock Synchronized with the power frequency
 Time indication 12-hour cycle
 Timer setting Only for recording
 8 programs 21 days at max.
 Power back up Self-charging battery incorporated
 Back-up duration: Up to 10 minutes at one time

General

Power requirements 120 V AC $\pm 10\%$, 60 Hz $\pm 0.5\%$
 Power consumption 65 W
 AC outlet Max. 200 W (switched/unswitched)
 Operating temperature 5°C to 40°C (41°F to 104°F)
 Dimensions Approx. 483 x 151.5 x 444 mm (w/h/d)
 (17 x 5 x 17 1/2 inches)
 incl. projecting parts and controls
 Weight Approx. 17.4 kg (38 lb 6 oz) net

Accessories supplied

75-ohm coaxial cable with F-type connectors (1)
 Antenna connector (1)
 Connecting cord (2 phono to 2 phono) (1)
 Connecting cord (4-pin mini-DIN to 4-pin mini-DIN) (1)
 Connecting cord VK-1000T (stereo mini to stereo mini) (1)
 Remote Commander RMT-164 with three size AA batteries (1)

Design and specifications subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

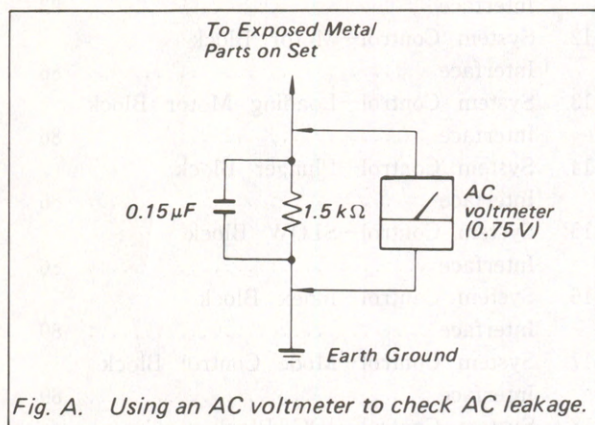


Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
1. GENERAL					
1-1.	Warning	7	2-11.	How to Open the SS-80 Board	53
1-2.	Precautions	8	2-12.	How to Open the RP-51 Board	54
1-3.	Features	9	2-13.	How to Take Off the Power Block	54
1-4.	ED Beta Format	10	2-14.	How to Take Off the Reel Base Ass'y	54
1-5.	Location and Function of Parts and Controls	12	2-15.	How to Take Off the FL Cassette Compartment Ass'y	54
1-6.	Antenna/Cable and TV Connection ..	18	2-16.	How to Take Off the Mechanical Chassis Block	55
1-7.	Connection to an Audio System	24	2-17.	Internal Views	56
1-8.	Power Connection	24			
1-9.	Adjusting the TV	25	3. DIAGRAMS		
1-10.	Presetting the Active Channels in Your Area	25	3-1.	Overall Block Diagram	57
1-11.	Date and Clock Setting	26	3-2.	Video (1) Block Diagram	62
1-12.	Data Screen Display	27	3-3.	Video (2) Block Diagram	67
1-13.	Handling the Video Cassettes	27	3-4.	Servo Block Diagram	70
1-14.	Recording TV Programs	28	3-5.	System Control Block Diagram	73
1-15.	Playback	30	3-6.	System Control—Video Block Interface	80
1-16.	Various Playback Modes	31	3-7.	System Control—Audio Block Interface	80
1-17.	Viewing Digital Picture	32	3-8.	System Control—Digital Block Interface	80
1-18.	Use of the Tape Counter	32	3-9.	System Control—Servo Block Interface	83
1-19.	Time Search	33	3-10.	System Control—Reel Motor Block Interface	83
1-20.	Timer Activated Recording	34	3-11.	System Control—Capstan Motor Block Interface	83
1-21.	Quick Timer Recording	36	3-12.	System Control—Motor Block Interface	86
1-22.	Index Function	37	3-13.	System Control—Loading Motor Block Interface	86
1-23.	Beta hi-fi Audio Recording	38	3-14.	System Control—Plunger Block Interface	86
1-24.	PCM Recording and Playback	39	3-15.	System Control—SLOW Block Interface	86
1-25.	Tape Editing	40	3-16.	System Control—Index Block Interface	89
1-26.	Various Tape Editing Modes	41	3-17.	System Control—Mode Control Block Interface	89
1-27.	Editing with another EDV-9500 or SL-HF1000	41	3-18.	System Control—JOG Block Interface	89
1-28.	Automatic Assemble Editing	43	3-19.	Audio(1) Block Diagram	92
1-29.	Automatic Insert Editing	45	3-20.	Audio(2) Block Diagram	95
1-30.	Simple Editing	46	3-21.	Tuner Block Diagram	97
1-31.	Editing with a SONY VCR Equipped with a Control Terminal	47	3-22.	Digital Block Diagram	99
1-32.	Manual Insert Editing	47	3-23.	Power Block Diagram	104
1-33.	Tape Editing Techniques	48			
1-34.	Camera Recording	49	4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM		
1-35.	Using the SONY Control System	49	4-1.	Frame Schematic Diagram	107
1-36.	Rack Mounting	50	4-2.	Printed Wiring Boards and Schematic Diagram	111
1-37.	Trouble Checks	50			
2. DISASSEMBLY					
2-1.	How to Take Off the Cases	51			
2-2.	How to Take Off the Front Panel ..	51			
2-3.	How to Open the FR-32 Board	51			
2-4.	How to Open the TM-92 Board	52			
2-5.	How to Take Off the Timer Holder ..	52			
2-6.	How to Open the TU-86 Board	52			
2-7.	How to Open the VE-1 Board	52			
2-8.	How to Open the VI-40 Board	53			
2-9.	How to Open the DI-6 Board	53			
2-10.	How to Open the AU-38 Board	53			

<u>Section</u>	<u>Title</u>	<u>Page</u>
	● RP-51 Board	111
	● VI-40, VS-29, EQ-3, CH-45, RF-20, CH-49 and HJ-5(A) Boards	119
	● VE-1 (Video), VE-3 and YX-1 Boards ..	128
	● DE-4, PE-4 and YK-2 Boards (H.I.C)....	136
	● CF-3 and YF-2 Boards (H.I.C)	139
	● SS-80 (Servo), REEL MOTOR, RT-12 and HJ-5(B) Boards	143
	● SS-80 (System Control), FE-17, RD-24, LM-8 and SR-4 Boards	152
	● AU-38 Board	161
	● AU-38 (AFM) Board	168
	● VE-1 (Normal Audio) Board	174
	● TU-86, TU-87, TU-88 and UE-1 Boards	181
	● DI-6 Board	188
	● DI-6 Board	194
	● TM-92, MO-5, FR-32, HP-36 and JK-27 Control Switch Block and JOG Shuttle Block Boards	201
	● PS-165, PS-163, PS-164, PS-166, PS-176 and PS-177 Boards	209
4-3.	Semiconductors	215

5. EXPLODED VIEWS

5-1.	Front Panel, Cover Assemblies	217
5-2.	Timer Assembly	218
5-3.	Power Assembly	219
5-4.	Main Board Assembly	220
5-5.	Front Loading Assembly	221
5-6.	Chassis Assembly 1	222
5-7.	Chassis Assembly 2	223
5-8.	Drum Assembly	224
5-9.	Reel Base Assembly	225

6. ELECTRICAL PARTS LIST	226
HARDWARE LIST	268

7. MECHANICAL ADJUSTMENTS

7-1.	Preparation for Mechanical Section Check, Adjustment and Replacement	269
7-1-1.	How to thread the Tape when the FL Cassette Compartment Ass'y is Off ..	269
7-1-2.	How to Put the Recorder in Playback Mode with the FL Cassette Compartment Taken Off	269
7-1-3.	How to Put the Recorder in Recording Mode with the FL Cassette Compartment Taken Off	269
7-1-4.	Manual Loading and Unloading with this Unit Powered Down	270
7-1-5.	Manual Threading and Unthreading with this Unit Powered Down	270

7-2.	Periodic Checks and Maintenance	271
7-2-1.	Cleaning the Rotary Head Disk Assembly	271
7-2-2.	Cleaning the Tape Movement System	271
7-2-3.	Cleaning the Driving System	271
7-2-4.	Periodic Check Items	272
7-2-5.	Tools and Fixtures Required for Servicing	273
7-3.	Check, Adjustment and Replacement	274
7-3-1.	Confirming How the Video Head is Worn	274
7-3-2.	Detaching Rotary Head Disk Assembly	275
7-3-3.	Fitting Rotary Head Disk Assembly	276
7-3-4.	Adjusting Flying Erase Head Rotary Transformer Gap	277
7-3-5.	How to Tape Off the Upper Drum	277
7-3-6.	How to Fix the Upper Drum	278
7-3-7.	Centering Adjustment	278
7-3-8.	Matters to be Attended to when Replacing the Rotary Coupler Ass'y and the Guide Arm Ass'y	278
7-3-9.	Video Head Dihedral Check and Adjustment	279
7-3-10.	Replacing the Drum Assembly	280
7-3-11.	Adjusting the Motor Gap when Replacing the Drum Assembly	281
7-3-12.	How to Detach the Stator and the Rotor when Replacing the Drum	281
7-3-13.	How to Detach the Capstan Motor ..	282
7-3-14.	Capstan Shaft Verticality Adjustment	282
7-3-15.	How to Pull the S Coil Sensor Out	283
7-3-16.	Adjusting the Positions of the Gears of the FL Cassette Compartment Assembly	284
7-3-17.	Checking and Adjusting the Cassette Door Assembly	284
7-3-18.	Taking the No.2 Guide Off	285
7-3-19.	Taking the No.3 Guide Off	285
7-3-20.	Preparation to Take Off the S Threading Ring	286
7-3-21.	Taking the S Threading Ring Off ..	288
7-3-22.	Mounting the S Threading Ring and Adjusting its Position	289
7-3-23.	Pinch Snap-fit Limiter Gap Check and Adjustment	290
7-3-24.	Checking and Adjusting the Threading End Switch	291

<u>Section</u>	<u>Title</u>	<u>Page</u>
7-3-25.	T Coil Sensor Mounting and Operation Check	292
7-3-26.	Adjusting the Position of the Tension Regulating Lever	292
7-3-27.	Adjusting the Forward and the Back Tension	293
7-3-28.	Measuring the Reverse Torque	293
7-3-29.	Measuring the Forward Torque	293
7-4.	Tape Path Adjustment	294
7-4-1.	Preparation for Adjustment	295
7-4-2.	Entrance Side Tracking Adjustment ..	295
7-4-3.	Exit Side Tracking Adjustment	298
7-4-4.	Adjustment to be Made after the ACE Assembly is Replaced	299
7-4-5.	Adjustments to be Made after the Capstan Motor is Replaced	302
7-4-6.	Checking the Tape Feed Rate after Adjusting the Tape Path	303
8.	ELECTRICAL ADJUSTMENTS	
8-1.	Checking Power Supply	306
8-2.	System Control Checkings	306
8-2-1.	The Flying Erase Check	306
8-3.	Servo System Adjustments	307
8-3-1.	Reel Servo System Adjustment	307
8-3-2.	Drum Servo System Adjustment	307
8-3-3.	Capstan Servo System Adjustment ..	309
8-3-4.	Speed Change Playback System Adjustment	310
8-4.	Video System Adjustments	312
8-4-1.	Video Signal Input System Adjustments	313
8-4-2.	Y signal Playback System Adjustments	316
8-4-3.	Y Signal Record System Adjustment	318
8-4-4.	Chroma Signal System Adjustments ..	320
8-4-5.	Character Insertion Circuit Adjustment	322
8-4-6.	Digital System Adjustments	322
8-5.	Audio System Adjustments	327
8-5-1.	Beta hi-fi Audio System Adjustment	327
8-5-2.	Normal Audio System Adjustments ..	332
8-6.	Tuner System Adjustments	335
8-6-1.	RF AGC Adjustment	335
8-6-2.	MPX Input Level Adjustment	335
8-6-3.	Separation Adjustment	335
8-7.	Adjustment Elements Location	336
WIRELESS COMMANDER RMT-164		341

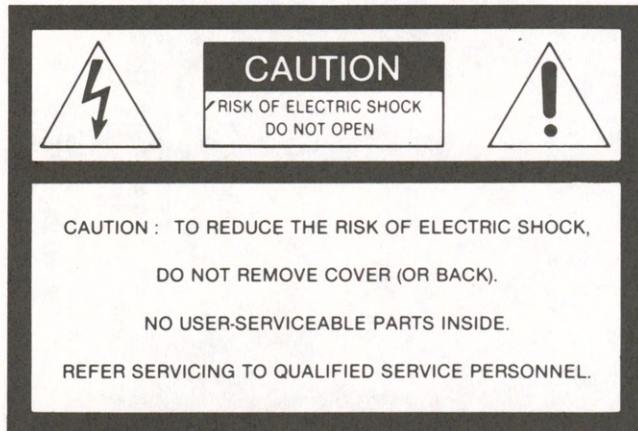
SECTION 1 GENERAL

Dealing of EDV-9500 is described in this section.

Dealing of EDV-9300 is the same as that of EDV-9500,
so that it is omitted.

1-1. WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

Reorient the receiving antenna

Relocate the equipment with respect to the receiver

Move the equipment away from the receiver

Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful :

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Notes on recording and playback formats

- This unit can be used with any video cassette tapes having the mark **ED Beta** or **B**.
- The recording/playback are performed in ED Beta format with **ED Beta** cassettes and in **B** format with **B** cassettes. The ED Beta or **B** format is selected automatically when a cassette is inserted.
- Recording in **B1** or **B1s** mode is not available with this unit.
- The SUPER BETA button does not function for the ED Beta format recording

The recording/playback modes available with **ED Beta** and **B** cassettes

	Recording modes	Playback modes
ED Beta cassettes	BII, BIII	BII, BIII
B cassettes	BII, BIII	B1, B1s, BII, BIII

1-2. PRECAUTIONS

On safety

- Operate the unit only on 120 V AC, 60 Hz.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

On installation

- Allow adequate air circulation to prevent internal heat build-up.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, as for example a microwave oven or a large loudspeaker.
- Do not place any heavy object on the unit.

On operation

- When the unit is not in use, turn the power off to conserve energy and to extend its useful life.
- Remove and store video cassettes after recording or playback.
- Store the cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

On cleaning

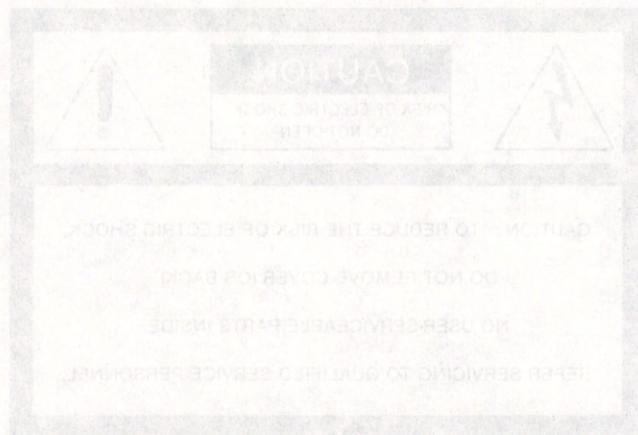
Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution.

Do not use any type of solvent, such as alcohol or benzene, which might damage the finish.

On repacking

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

If you have any questions about this unit, contact your Sony service facility.



1-3. FEATURES

ED (Extended Definition) Beta Format

Super high quality picture obtained with ED Beta format

- 9.3 MHz Hi-Band recording assures high resolution of more than 500 lines (horizontal resolution).
- Metal **ED Beta** tape allows high definition recording.
- TTS (Tilted Sendust-Sputtered) heads make the most of the high quality potential in metal tape.
- With the S VIDEO connector, the luminance and chrominance signals are input and output separately to ensure high picture quality.

High quality sound obtained with Beta Hi-fi recording

- Dynamic range more than 90 dB
- Tape stabilizer assures stable tape transport and greatly reduces modulation noise.

For further details, see "ED Beta Format" on page 10.

Professional-Quality Editing

Twin flying erase heads

Color streaks and blurs which were conventionally caused by continuous recordings or insert editings are eliminated with the twin flying erase heads.

Tape counter with frame digits

The tape counter displayed on the monitor screen indicates the position of the tape in unit of frames. This allows an accurate search of editing points.

Automatic assemble editing of up to 8 scenes

Framing servo

The framing servo allows highly accurate connection between two continuous editings.

Versatile Functions

Data screen

The information of timer programs, editing points, etc. are displayed on the monitor screen for easy presetting and checking.

Remaining tape counter

The remaining tape counter indicates the length of recording or playback time possible from the actual point on the tape to its end.

Time search function

Using the time search function the tape can be advanced or rewound to the desired point automatically by designating the time.

Multi-function Wireless Commander

The Wireless Commander controls almost all functions of the VCR including editing, and can also be used with other Sony remote control VCRs and TVs.

1-4. ED BETA FORMAT

The Beta format VCR employs a large-diameter head drum and a high tape-to-head speed. This means the VCR is capable of recording a large amount of information, and it enhances the possibility of high quality picture reproduction. Taking advantage of the Beta format, Sony

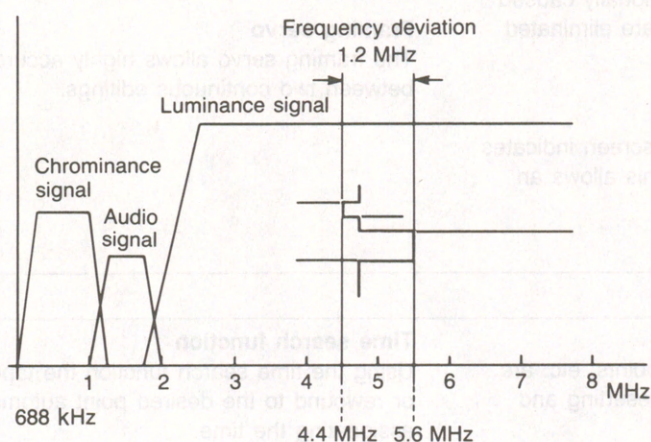
has developed the 6.0 MHz SHB (Super Hi-Band) recording format to improve the picture quality in **BI**S mode. The newly developed ED Beta format is designed to improve the picture quality in **BI**I and **BI**II modes. The main characteristics of the ED Beta format are as follows:

Super High Quality Picture

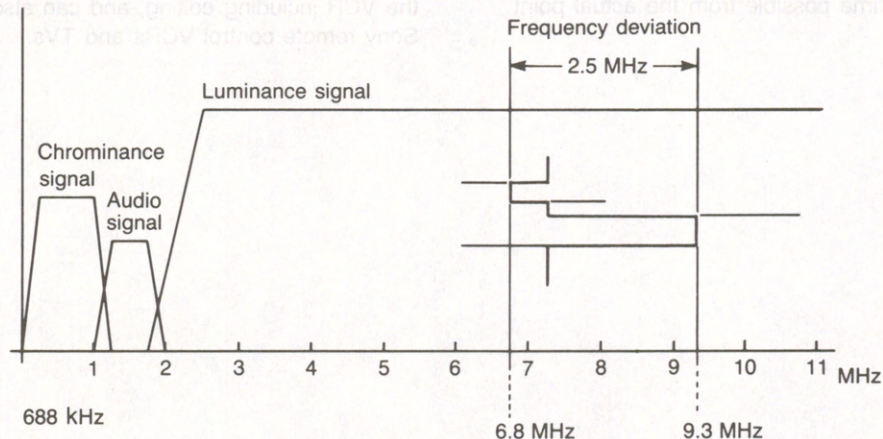
The information capacity is a key element for picture improvement. It can be increased by shifting up the FM carrier frequency range. In the ED Beta format, the FM carrier frequency range of the luminance signal is

shifted up to 6.8–9.3 MHz. This is higher than the 4.4–5.6 MHz range of the Super Beta format. Thanks to this, the horizontal resolution is improved to more than 500 lines.

Frequency allocation of the Super Beta format



Frequency allocation of the ED Beta format



Use of Metal Tape

Tape using metal magnetic material is ideal for a video system because it has a high coercive force to allow high density recording. The ED Beta format VCR uses metal tape covering a sufficient frequency range to achieve high-quality video signal recording/playback. Metal tape also has an excellent frequency response and high signal-to-noise

ratio in audio recording and playback (including audio recording/playback on the conventional audio track). To make the most of the potential of the metal tape, the ED Beta format VCR employs the TSS (Tilted Sendust-sputtered) heads.

S VIDEO (Separated Luminance/Chrominance Signal) Input/Output Connectors

Conventionally, video equipments exchange the composite video signal containing the luminance (Y) signal and the chrominance (C) signal mixed. The composite video signal is liable to produce interference resulting in picture quality loss. On the contrary, an S VIDEO connector transmits or receives the video signal separated into the luminance

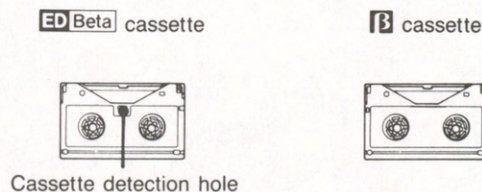
signal and the chrominance signal. Flickers and color blur in the picture are minimized with the separated video signal, and sharpness is enhanced to such an extent that hair and fine stripes are clearly visible. The S VIDEO connector also assures an excellent editing quality with minimum picture quality loss.

Compatibility with Conventional VCRs

- An **ED Beta** cassette cannot be recorded and played back with a conventional VCR.
- An ED Beta format VCR is capable of recording and playback of **B** cassettes in SuperBeta format (**B II** and **B III** modes).
- Any cassette recorded in the conventional **B** format can be played back with an ED Beta format VCR.
- The recording tape speeds in the ED Beta format are **B II** and **B III**, compatible with the conventional **B** format. Recording/playback time is 2 hours or 3 hours using an L-500 tape or equivalent.

Cassette Detection Hole

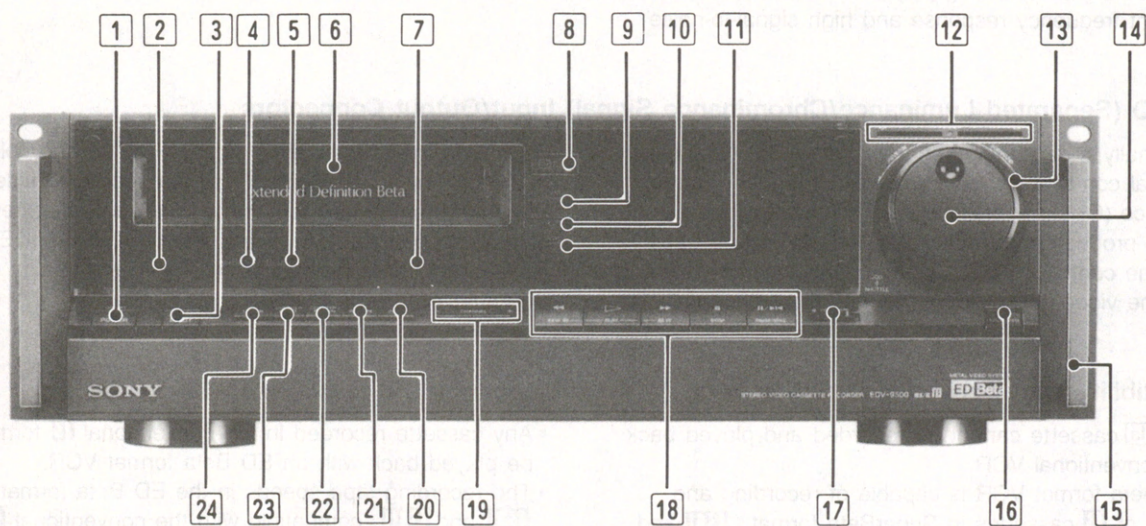
The **ED Beta** cassette is equipped with the cassette detection hole to distinguish it from a **B** cassette. When an **ED Beta** cassette is inserted into this VCR, the VCR is set to the ED Beta format automatically through detection of this detection hole, and the **ED Beta** indicator lights.



1-5. LOCATION AND FUNCTION OF PARTS AND CONTROLS

For details on the use of each control, refer to the pages indicated in the black circles (●).

Front



1 POWER switch and indicator

2 Remote sensor

3 ▲ EJECT button

Press to eject the cassette.

This button does not function during recording.

4 SuperBeta indicator

Lights when the SUPER BETA switch is set to ON.

5 Beta hi-fi indicator

Lights to indicate Beta hi-fi recording and playback.

6 Cassette compartment

7 Peak program meter

Shows the peak input level of the right and left channels during Beta hi-fi recording.

8 ED Beta indicator

Lights to indicate that the ED Beta recording and playback format is selected. The indicator goes off when a **B** format cassette is inserted.

9 VTR indicator

Lights to indicate the VTR mode.

10 DIGITAL PICTURE indicator

Lights when the digital picture function is in use.

11 EDIT indicator

Lights when the EDIT switch is set to ON.

12 Playback indicators

Indicate the direction of playback (including various playback modes and playback pause mode).

13 SHUTTLE ring

Select the playback speed in various playback modes or during editing.

14 JOG dial

Used to select the channels, set the date and clock and set the timer programs. This dial is also used to select the playback speed in various playback modes or during editing.

15 Handle

16 PUSH OPEN button

Press this button to open the drawer. For the controls inside the drawer, see page 10.

17 ● REC switch

Slide to the right to start recording.

18 Tape transport buttons and indicators

◀ REW (rewind), ▶ PLAY, ▶▶ FF (fast-forward), ■ STOP, || / ▶ PAUSE/STILL

19 CHANNEL + / - buttons

Press to select the channels, to set the date, clock or timer program. And press + to advance and - to reverse.

20 INDEX button

Used for the index scan or index search operation.

21 TAPE RETURN button

In the stop mode, press this button to advance or rewind the tape to the counter zero point.

22 COUNTER/REMAIN button

Press to change the tape counter display to the approximate recording or playback time remaining on the tape.

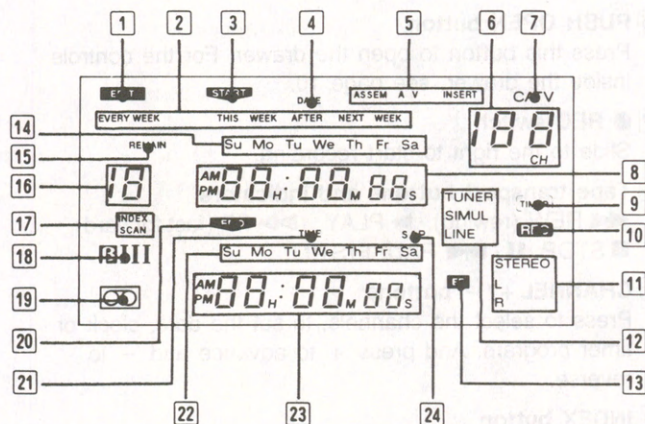
23 COUNTER RESET button

Press to reset the tape counter to "0H00M00S" and "0:00:00:00" on the TV screen.

24 TV/VTR button

Press to watch the program selected on the recorder so that the VTR indicator lights up (VTR mode). To watch a different TV program while recording another, press this button again so that the indicator goes off.

Display Window

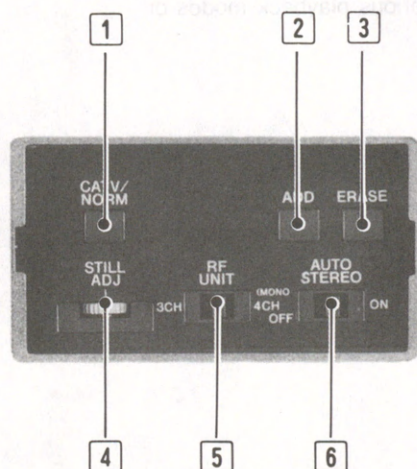
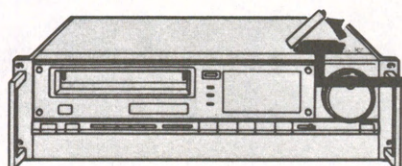


- 1 Automatic editing mode indicator
- 2 Week indicator
- 3 This indicator appears when the starting time of a timer recording or the starting point of the automatic editing is displayed.
- 4 This indicator appears when the date is displayed.
- 5 Editing mode indicators: ASSEM (assembly editing), A INSERT (audio insert), V INSERT (video insert)
- 6 Channel number or the L1 (line 1)/L2 (line 2) input indicator
- 7 CATV (cable TV) indicator
- 8 Date, starting time of a timer recording, starting point of the automatic editing, tape counter or remaining time counter

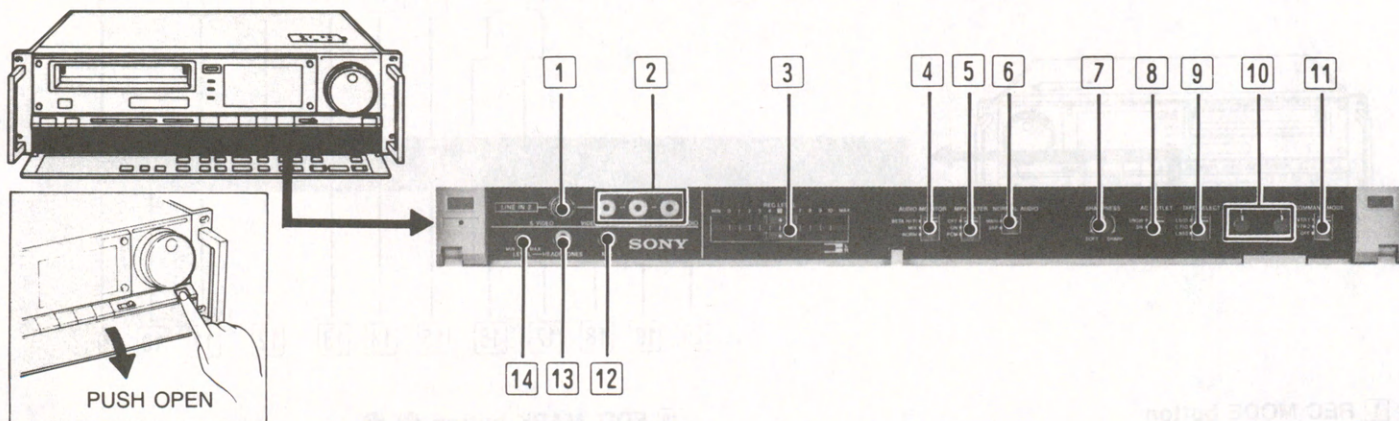
- 9 This indicator appears during timer setting or checking. "TIMER REC" will appear when a timer recording is activated.
- 10 This indicator appears during recording.
- 11 Channel of the stereo program
- 12 Input mode indicators
- 13 EE mode* indicator
- 14 Day-of-the-week indicator
- 15 This indicator appears when the remaining time counter is displayed.
- 16 Timer program number for timer-activated recording, index number for index searching or scanning, or scene number for automatic assemble editing
- 17 Index scan or index search indicator
- 18 Tape speed indicator
- 19 This indicator indicates that a cassette is inserted.
- 20 This indicator appears when the ending time of a timer recording or the ending point of the automatic editing is displayed.
- 21 This indicator appears when the current time is displayed.
- 22 Day-of-the-week indicator
- 23 Current time, ending time of a timer recording, or ending point of the automatic editing
- 24 SAP (Second Audio Program) indicator

* EE (Electric-to-Electric) mode: The input signals (which are not the signals recorded on the tape) are displayed on the monitor screen.

Tuning Compartment



- 1 CATV/NORM (normal) selector
- 2 ADD button
- 3 ERASE button
- 4 STILL ADJ (freeze picture adjustment) control
- 5 RF UNIT selector
- 6 AUTO STEREO switch
Normally set to ON. When the signal is weak on a particular channel, set to OFF.



1 LINE IN 2 S VIDEO connector (4-pin mini-DIN)

When editing, connect to the S VIDEO output connector of another VCR.

2 LINE IN 2 VIDEO/AUDIO jacks (phono type)

Connect to the video/audio output jacks of another VCR or video camera.
The signal cannot be input from this VIDEO jack when external equipment is connected to the LINE IN 2 S VIDEO connector.

3 REC LEVEL controls

Adjust the audio recording level. Normally keep these controls at the center detent position **5**.

4 AUDIO MONITOR BETA HI-FI/MIX/NORM selector

Select the sound to be monitored.

BETA HI-FI: Normally set to this position for Beta hi-fi sound

MIX: To monitor the sound recorded on both the video track in Beta hi-fi and the conventional audio track

NORM: To monitor the sound recorded on the conventional audio track only.

5 MPX FILTER/PCM selector

When making a recording other than regular TV recordings, set the selector as follows:

OFF: For recording the sound from a record player or a compact disc player

ON: For recording FM radio broadcast programs (If your FM tuner is provided with an MPX filter, set this selector to OFF.)

PCM: For PCM recording and playback

Note

Regardless of the setting of this selector, TV programs are automatically recorded in MPX FILTER ON mode.

6 NORMAL AUDIO selector

Select the sound to be recorded on the conventional audio track. Normally set to MAIN. To record SAP (Second Audio Program), set to SAP.

7 SHARPNESS control

Use to adjust the sharpness of the picture if necessary. Normally set the control at the center detent position.

8 AC OUTLET selector

SW (switched): The AC OUTLET on the rear is controlled by the front panel POWER switch.

UNSW (unswitched): The AC OUTLET is not controlled by the POWER switch and always supplies AC power.

9 TAPE SELECT switch

When using the remaining tape counter, set this switch according to the length of the tape being used.

10 TRACKING controls

Normally keep these controls at the center detent position. Turning either of these controls may help clear possible streaks on the screen especially for tapes recorded on other VCRs.

NORM (normal): For normal and double speed playback.,

SLOW: For slow speed playback by turning the JOG dial or SHUTTLE ring, x1/5 and x1/10 speed playback, and freeze picture.

11 COMMAND MODE selector

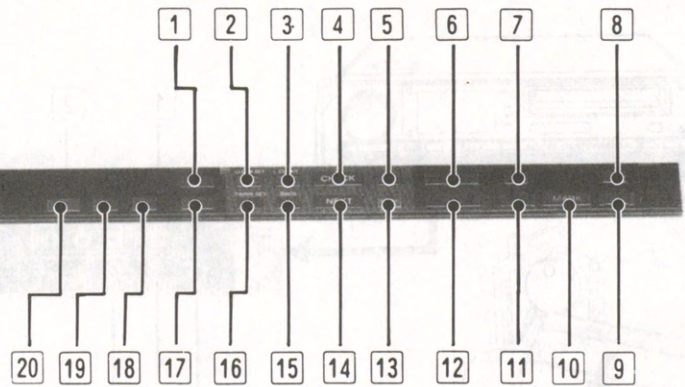
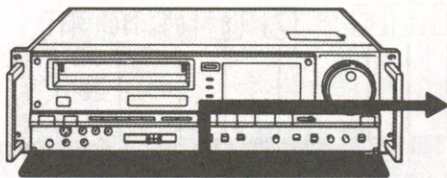
To remotely control this VCR with the supplied Wireless Commander, set this selector to the same position as that on the Commander.

12 MIC jack (mini type)

Connect a microphone to record the sound from this microphone on the conventional audio track.

13 HEADPHONES jack (stereo mini type)

14 LEVEL (headphone level) control



1 REC MODE button

Press to select the recording tape speed, **II** or **III**. The playback speed will be set automatically regardless of the setting of this button.

2 CLOCK SET button 20

Press to start the setting of the date and clock.

3 CLEAR button 30

Press to clear the timer setting.

4 CHECK button

Press to check the contents of the preset timer programs and the starting and ending points of the automatic assemble editing.

5 QUICK TIMER button 30

Press to start a quick timer recording and then set the duration of the recording.

6 INDEX MARK and ERASE buttons 31 32

Press MARK to mark an index signal at the desired point on a tape during recording or playback. To erase a pre-recorded index signal, locate the index signal and press the ERASE button.

7 DATA SCREEN button

The channel number, tape operation mode, tape counter, index function, display for setting and checking timer recording programs and display for automatic editing are displayed on the TV or monitor screen together with a picture. To turn off the display, press this button. To resume the display, press it again.

8 EE button

During tape playback (except digital pictures) keep this button pressed to momentarily view and listen to the TV program received by the built-in tuner or the program input from the LINE IN 1 or LINE IN 2 jacks. When the button is released, the playback picture will return on the TV screen.

9 EDIT START button 38 40

Press to start the automatic assemble editing or automatic audio/video insert operation.

10 EDIT MARK button 37 39

Use to mark the starting and ending points for the automatic assemble editing and automatic audio/video insert operation. Locate the desired editing point and press this button.

11 EDIT ASSEMBLE button 37

Press to set the unit to automatic assemble editing mode.

12 INSERT AUDIO and VIDEO buttons 39

Use to "insert" a new recording onto a portion of a recorded tape.

AUDIO: To insert sound on the conventional audio track

VIDEO: To insert picture and/or Beta hi-fi sound on the video track

13 TIMER REC button 29

Press to activate the timer recording.

14 NEXT button

Press to advance to the next item to be set during date, clock or timer setting or automatic assemble editing.

15 BACK button

Press to go back to the item previously set during date, clock or timer setting, or automatic assemble editing.

16 TIMER SET button 29

Press to start the setting or resetting of timer programs.

17 INPUT SELECT button

Press to select the program to be recorded so that the desired input mode indicator appears in the display window.

TUNER: For recording TV programs

SIMUL: For recording the sound from LINE IN 1 AUDIO and the picture of a TV program (FM simulcast recording)

LINE L1 (line 1): For recording signals from LINE IN 1

LINE L2 (line 2): For recording signals from LINE IN 2 inside the front panel

18 AUDIO MONITOR L/R button

Select the channel(s) of the Beta hi-fi sound to be monitored so that the desired indicator appears in the display window.

STEREO: To monitor in stereo mode

L: To monitor the L (left) channel of a stereo program

R: To monitor the R (right) channel of a stereo program

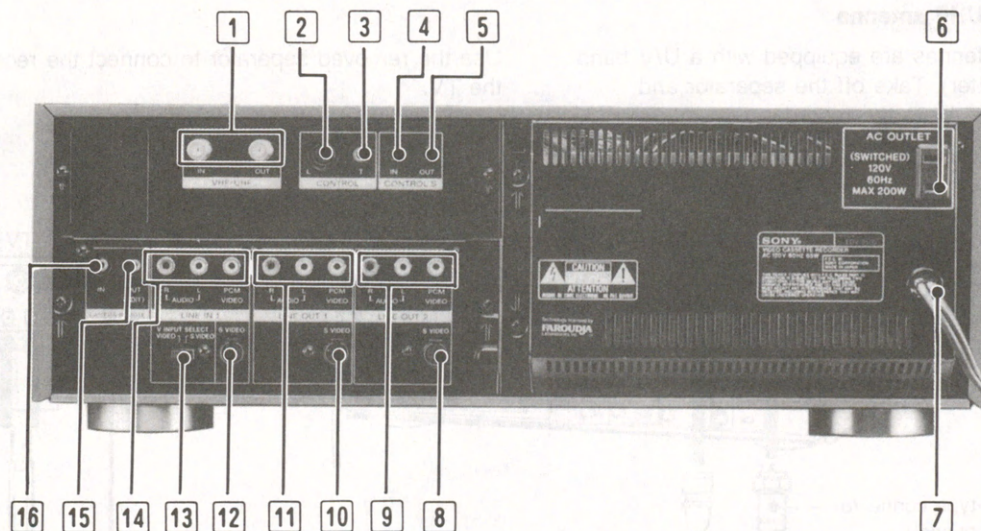
19 EDIT button

Normally keep this button at OFF (i.e. the EDIT indicator is off). When editing a tape onto another recorder, press the button so that the EDIT indicator lights.

20 SUPER BETA button

Normally keep this button at ON (i.e. the SuperBeta indicator lights).

Rear



1 VHF/UHF IN and OUT connectors (F type)

2 CONTROL L connector (5-pin DIN)

Connect to the CONTROL L connector of an optional video editing controller or other Sony products for various systematic operations.

3 CONTROL T jack (stereo mini type)

Connect to the CONTROL T jack of another EDV-9500 or SL-HF1000 for automatic editing.

4 CONTROL S IN jack (mini type)

Connect to the CONTROL S output jack of a program timer or other Sony products for various systematic operations.

5 CONTROL S OUT jack (mini type)

Connect to the CONTROL S input jack of other Sony products for automatic assemble editing and other systematic operations.

6 AC OUTLET

Supplies AC power to video or audio equipment.

7 AC power cord

8 LINE OUT 2 S VIDEO connector (4-pin mini-DIN)

Connect to the S VIDEO IN connector of a TV or color monitor.

9 LINE OUT 2 AUDIO and VIDEO/PCM jacks (phono type)

10 LINE OUT 1 S VIDEO connector (4-pin mini-DIN)

Connect to the S VIDEO IN connector of a TV or color monitor.

11 LINE OUT 1 AUDIO and VIDEO/PCM jacks (phono type)

12 LINE IN 1 S VIDEO connector (4-pin mini-DIN)

When editing, connect to the S VIDEO OUT connector of another VCR, etc.

13 V INPUT SELECT (video input select) switch

When external equipment is connected to the LINE IN 1 S VIDEO connector, set to S VIDEO. The signal cannot be input from the LINE IN 1 VIDEO/PCM jack. Be sure to reset to VIDEO when the S VIDEO connector is not to be used.

14 LINE IN 1 AUDIO and VIDEO/PCM jacks (phono type)

15 CAMERA REMOTE OUT (EDIT) jack (special mini type)

Connect to the CAMERA PAUSE or CAMERA PAUSE IN jack of another Sony VCR for editing.

16 CAMERA REMOTE IN jack (special mini type)

When recording with a video camera, connect the Sony HVA-220 AC adaptor to this jack.

1-6. ANTENNA/CABLE AND TV CONNECTION

Before making connections

- Turn off all equipments.
- Do not connect the AC power cord to a wall outlet until all the connections of the video cassette recorder and the TV have been completed.

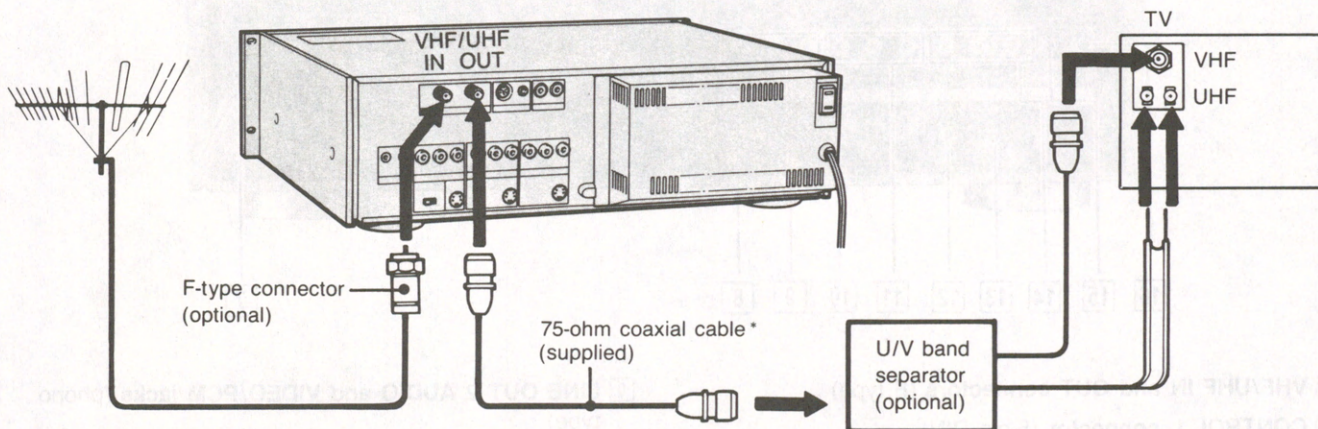
- Make connections firmly. Loose connections may cause a distorted picture.

Disconnect the TV antenna cable from the TV receiver and connect them to the recorder. Then connect the recorder and the TV.

Combination VHF/UHF antenna

Most combination antennas are equipped with a U/V band separator (signal splitter). Take off the separator and connect the cable directly to the recorder.

Use the removed separator to connect the recorder and the TV.



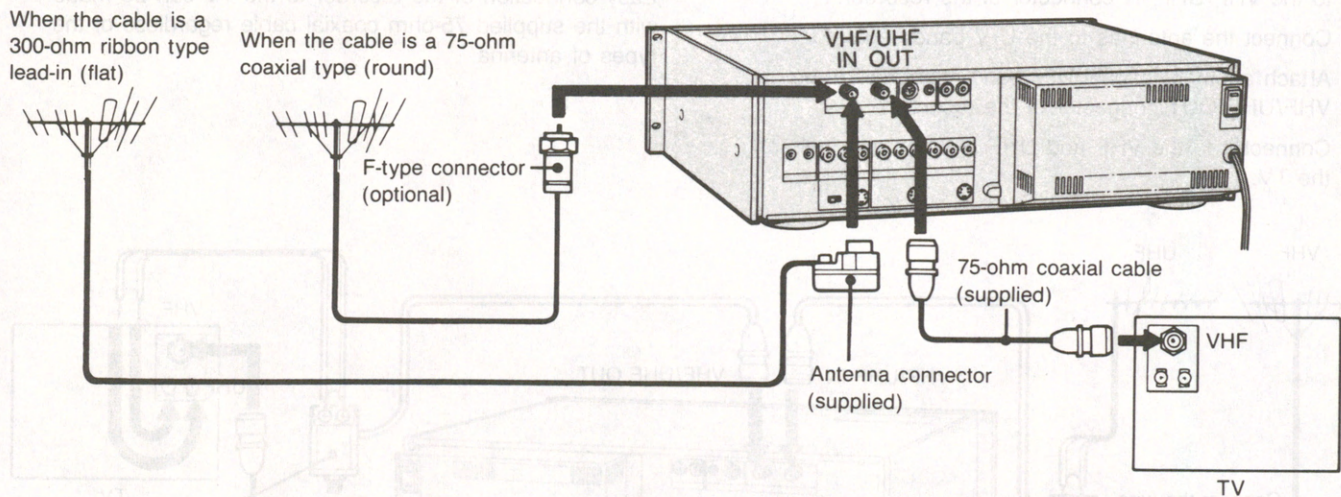
If you need a separator or a complete antenna system, consult your Sony dealer or a qualified technician.

* Use an optional RFC-8 extension cable, 8 m (25 ft) long, if the supplied 75-ohm coaxial cable is not long enough.

VHF antenna

When the cable is a 300-ohm ribbon type lead-in (flat)

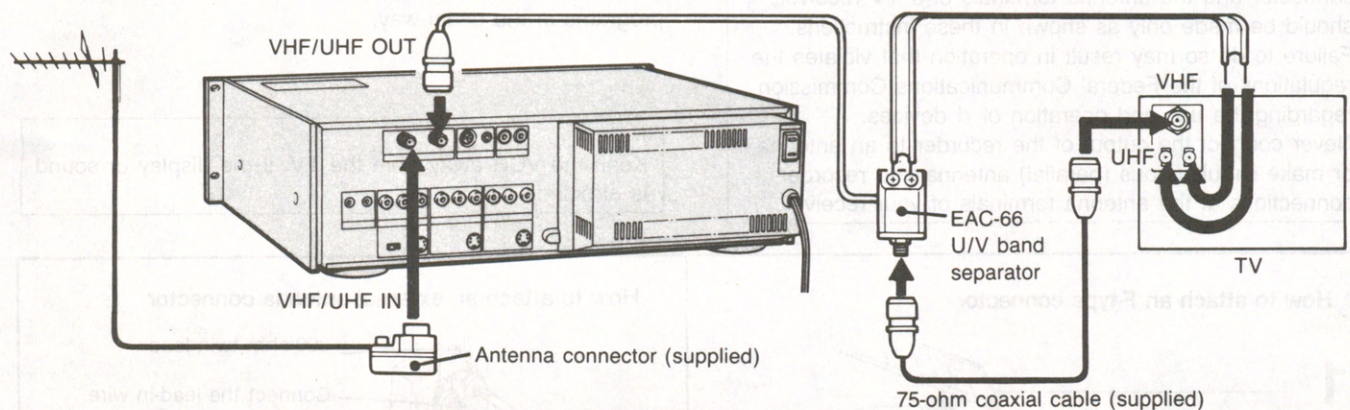
When the cable is a 75-ohm coaxial type (round)



UHF antenna

1 Attach an optional EAC-66 U/V band separator to the VHF/UHF OUT connector of the recorder.

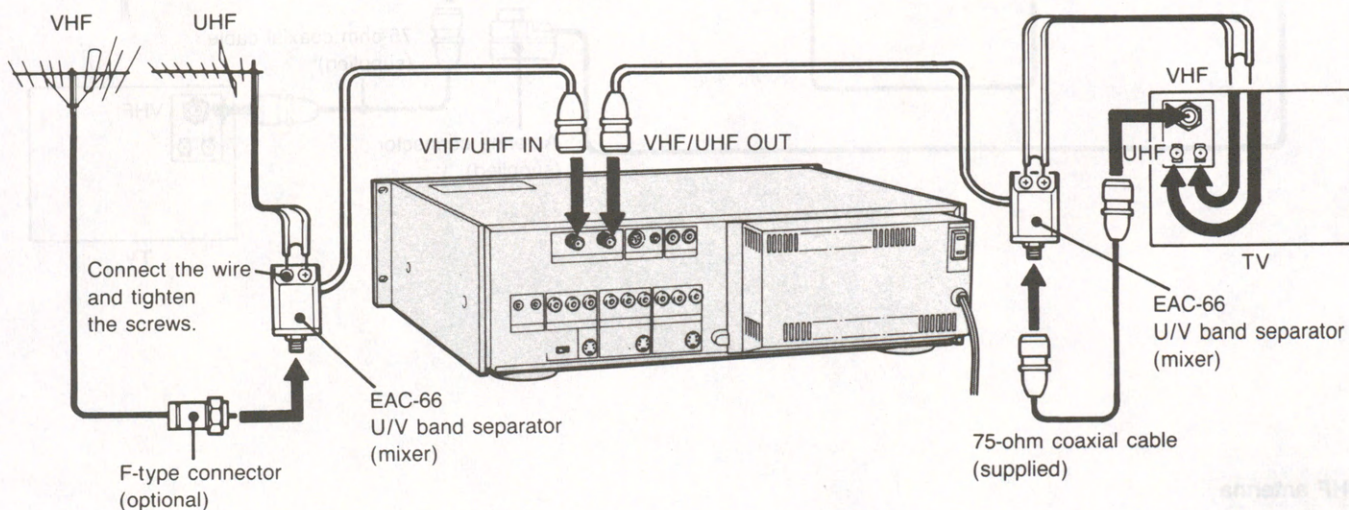
2 Connect the separator to the VHF and UHF antenna terminals of the TV.



When both VHF and UHF antennas are connected

- 1 Attach an optional EAC-66 U/V band separator (mixer) to the VHF/UHF IN connector of the recorder.
- 2 Connect the antennas to the U/V band separator.
- 3 Attach another optional U/V band separator to the VHF/UHF OUT connector of the recorder.
- 4 Connect it to the VHF and UHF antenna terminals of the TV.

When a TV has a 75-ohm UHF/VHF antenna terminal
Easy connection of the recorder to the TV can be made with the supplied 75-ohm coaxial cable regardless of the types of antenna.



Caution

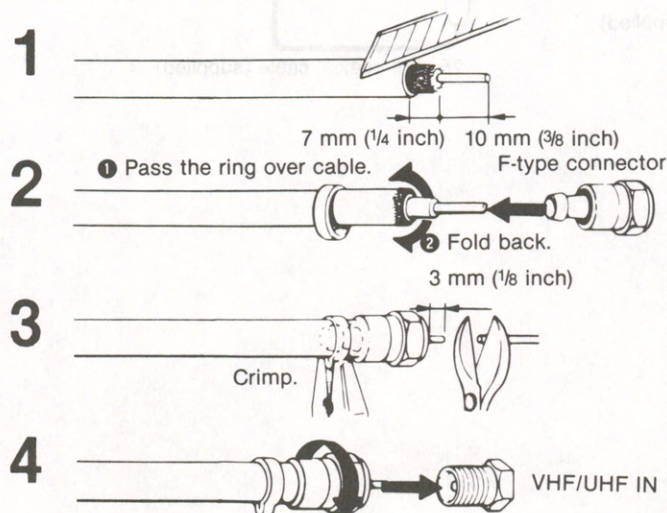
Connections between the recorder VHF/UHF OUT connector and the antenna terminals of a TV receiver should be made only as shown in these instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of rf devices. Never connect the output of the recorder to an antenna or make simultaneous (parallel) antenna and recorder connections at the antenna terminals of your receiver.

Once the connections explained above have been made, the antenna TV signals, as well as the signal from the recorder, will be fed to the TV and you can view TV programs in the usual way.

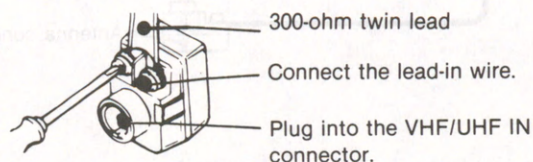
Note

Keep the VCR away from the TV, if the display or sound is affected.

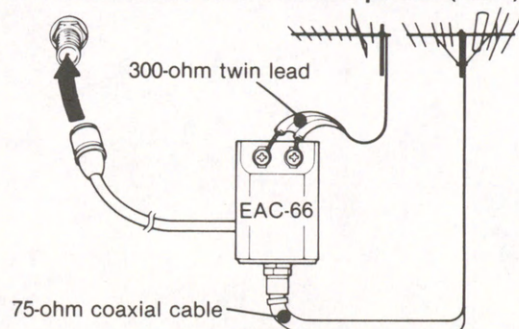
How to attach an F-type connector



How to attach an external antenna connector

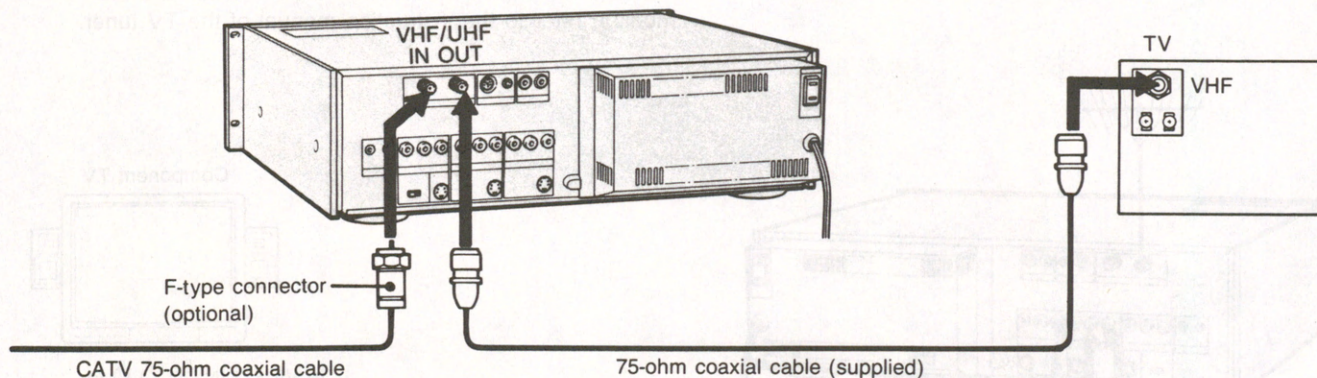


How to attach an EAC-66 U/V band separator (mixer)



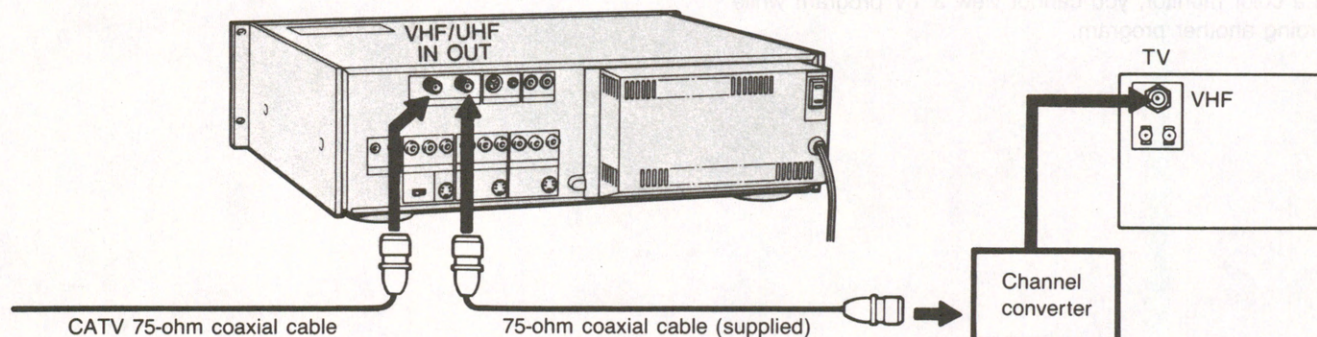
CATV cable

We recommend that you consult your cable company to make sure that the cable is properly connected.



When a TV is not a cable TV compatible type

Connect the cable TV channel converter between the recorder and the TV so that you can watch another cable TV program while recording one cable TV program.



Note to CATV system installer in the U.S.A.

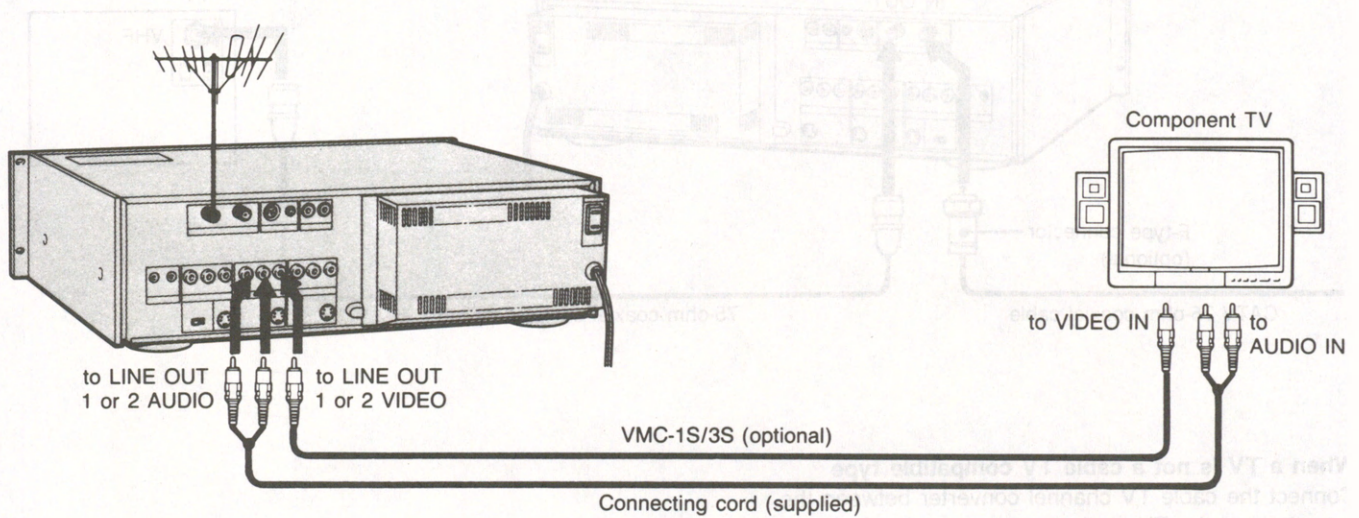
This reminder is provided to call the cable TV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Connecting a Color Monitor

To obtain a better-quality picture, connect a color monitor, such as the Sony Profeel Trinitron Component TV. When a component TV is combined with the speaker system as illustrated, you can enjoy tapes recorded with Beta hi-fi stereo.

To use a component TV tuner together with the monitor, make the same connection as in the case of the recorder and the conventional TV receiver described on pages 12 to 14.

For details on the connection of the TV tuner and the monitor, refer to the instruction manual of the TV tuner.



Note

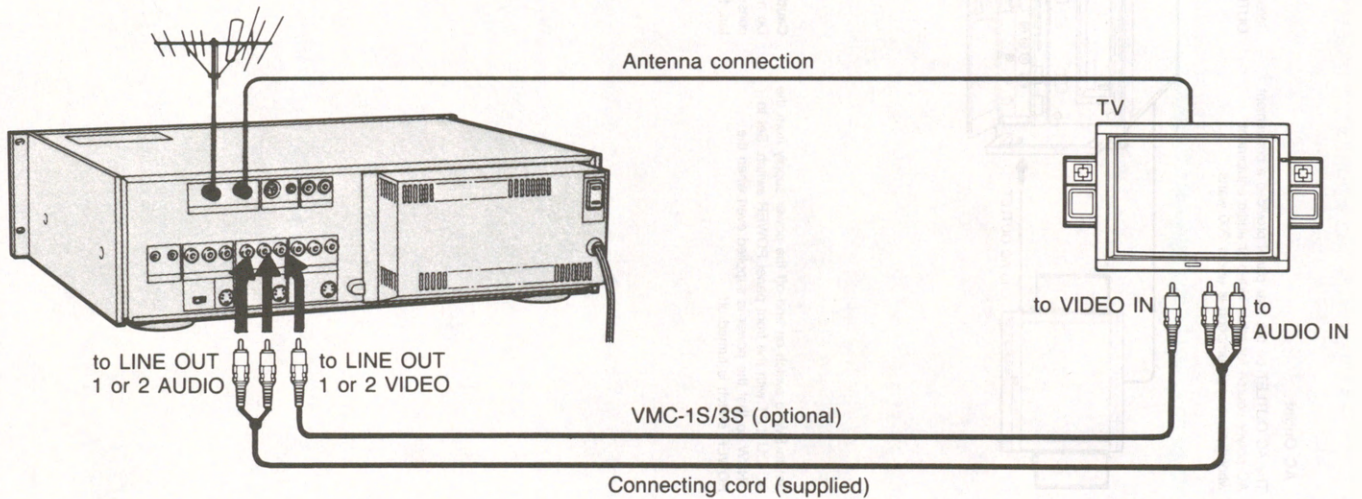
With a color monitor, you cannot view a TV program while recording another program.

Connecting TV Equipped with Video/Audio Input Jacks

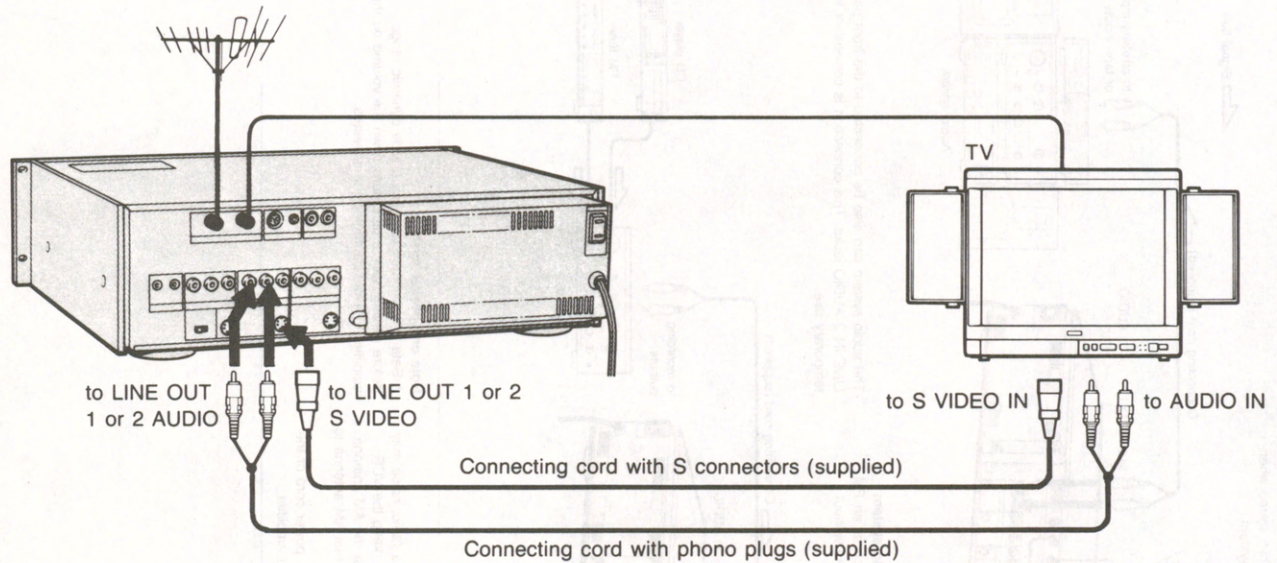
With the following connection, the picture and sound quality will be better than that when the TV is connected only to the VHF/UHF OUT terminal on the VCR.

To view the playback picture, set the TV/VIDEO input selector on the TV to VIDEO.

Connecting a TV equipped with a phono-type video input jack



Connecting a TV equipped with an S VIDEO input connector



To cancel the automatic TV/VTR mode selection of this VCR

This VCR is preset at the factory so that it will be automatically set to VTR mode when playback starts. To cancel this function, proceed as follows:

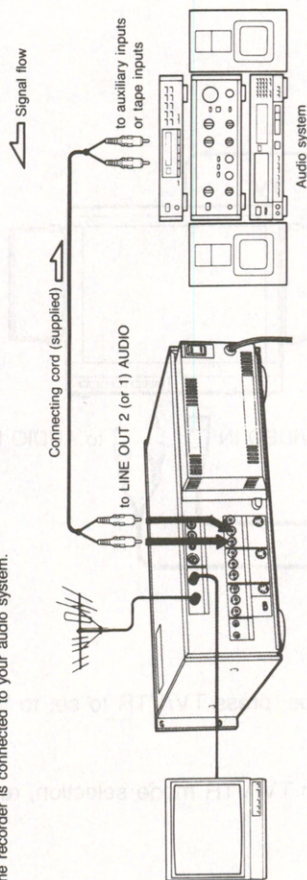
- 1 Turn off the VCR.
- 2 Keeping the TV/VTR button depressed, press the POWER switch.
The VTR indicator blinks and the function is cancelled.

When playing back a tape, press TV/VTR to set to VTR mode.

To resume the automatic TV/VTR mode selection, repeat steps 1 and 2.

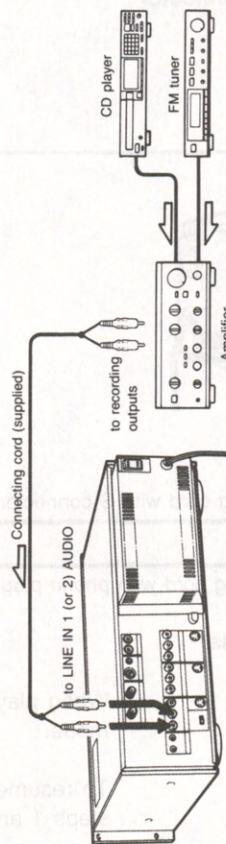
1-7. CONNECTION TO AN AUDIO SYSTEM

You can enjoy tapes recorded with Beta hi-fi stereo when the recorder is connected to your audio system.



To record audio signals from your audio system
You can record from an audio source such as an FM tuner, CD player, with the Beta hi-fi system without recording video signals.

The audio system can also be connected to the front panel LINE IN 2 AUDIO jacks. This connection is convenient for temporary use.



Connecting notes

- If the VCR is installed near a tuner or a radio, noise may be heard in AM reception. In this case, keep the VCR away from the tuner or the radio, adjust the AM antenna for minimum noise, or connect an external AM antenna to the tuner.
- Before connecting or disconnecting the power cord of the VCR, be sure to turn off the connected amplifier.

Note on speaker system

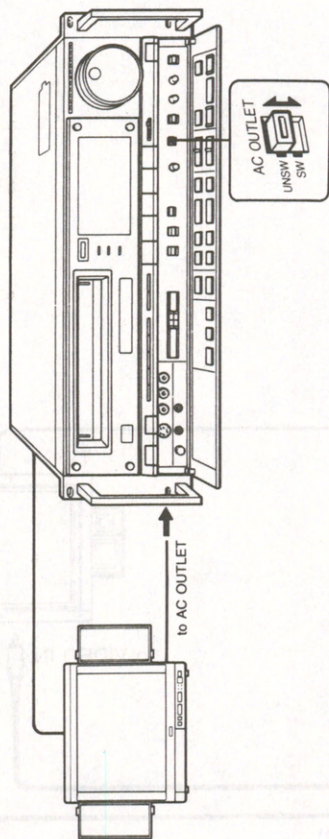
A Beta hi-fi recorded tape has a wide dynamic range. Before playing back a tape, turn down the volume on the amplifier to avoid damaging the speakers.

1-8. POWER CONNECTION

AC Outlet

The AC OUTLET on the rear panel provides a convenient AC power source for other video or audio equipment whose power consumption is under 200 watts.

Select the function of the AC OUTLET with the AC OUTLET selector inside the front panel.



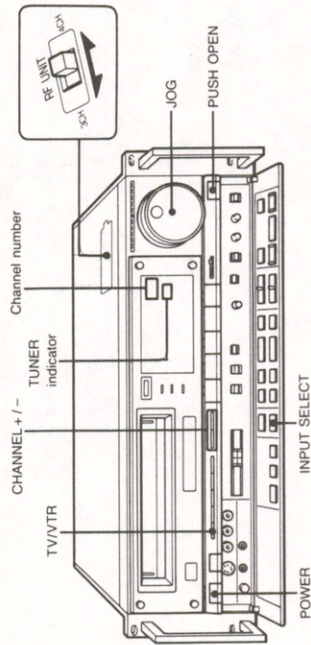
Caution

Do not connect any electric home appliances whose power consumption exceeds 200 watts, such as an electric iron or fan, to this outlet.

1-9. ADJUSTING THE TV

Your TV receiver must be adjusted to receive the signal from your recorder. If you connect a color monitor or a TV

equipped with video/audio input jacks, it does not need adjusting.



If you do not have a recorded video cassette tape

- 1 Set RF UNIT located in the tuning compartment to 3 CH or 4 CH whichever channel is not active in your area.
- 2 Press POWER. The indicator lights.

If you have a recorded video cassette tape

- 3 Press TV/VTR so that the TUNER indicator lights.
- 4 Check that the TUNER indicator appears in the display window, then select an active channel in your area by turning JOG or by pressing CHANNEL +/-.
- 5 (If the TUNER indicator does not appear, press PUSH OPEN to open the drawer and press INPUT SELECT until TUNER appears.)

- 6 Insert the cassette. See page 21.
- 7 Press ▶ PLAY.

- 8 Turn on the TV.
- 9 Set the TV to either VHF channel 3 or 4 to agree with the RF UNIT setting. The TV program selected on the recorder or the tape program will be displayed on the TV screen. If a picture does not appear on the TV screen or if the display is not clear, fine-tune the channel on the TV.
 - For details about TV channel adjustment, see the instruction manual of the TV receiver.

Check!
Check that the program displayed on the screen changes when a different channel is selected on the recorder.
If the program does not change, repeat the preceding steps.

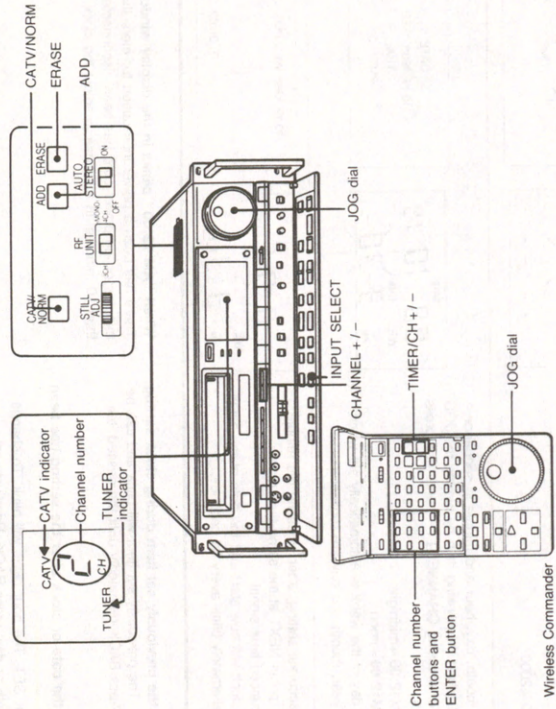
Check!
Check that the display on the screen changes when you stop the tape by pressing ■ STOP on the recorder. (To eject the cassette, press ▲ EJECT.)
If the program does not change, repeat the preceding steps.

Now your TV receiver is tuned to the recorder. Whenever you use the video recorder, you should set the TV to the channel which you have chosen above.

1-10. PRESETTING THE ACTIVE CHANNELS IN YOUR AREA

Your recorder is capable of receiving VHF channels 2-13, UHF channels 14-69 and cable TV channels 1-125 (A-8 to W+84). See cable TV channel chart on page 20. By adding and erasing channels, you can preset the

recorder so that only the desired channels will appear in sequence when you select a channel later with CHANNEL +/- on the recorder, or TIMER/CH +/- or JOG dial on the Wireless Commander.



Before Presetting

- Turn on the recorder and the TV. Make sure that the TV is set to the correct channel (channel 3 or 4) for the recorder.
- Press INPUT SELECT so that the TUNER indicator and channel number appear in the display window.
- For presetting cable TV channels, press CATV/NORM to display the CATV indicator in the display window. For off-the-air TV channels, press it again to turn off the CATV indicator.

Adding Channels

- 1 Select the channel to be added with the number buttons and ENTER on the Commander.

e.g. To select channel 16

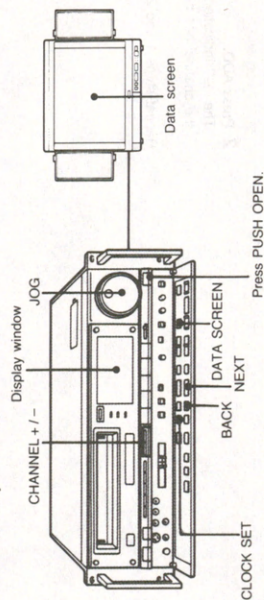


- 2 Press ADD. The "... " indication appears momentarily, indicating that the channel has been added.

Repeat steps 1 and 2 for other channels to be added.

1-11. DATE AND CLOCK SETTING

When you connect the AC power cord to wall outlet, the clock indicates "Su AM 12:00" and it will blink to show that the clock is ready to be set.



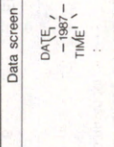
JOG dial
Turn clockwise to advance the digits, and counterclockwise to reverse them.

CHANNEL +/- buttons
Press "+" to advance the digits, and "-" to reverse them. If the button is kept depressed, the digits will advance or reverse continuously.

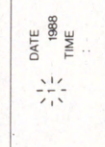
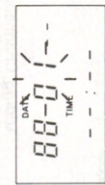
To turn on and off the data screen display, press DATA SCREEN.

Example: to set the date/clock to 3:30 p.m., October 19, 1988

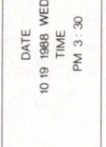
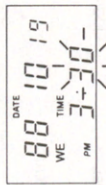
1 Press CLOCK SET.



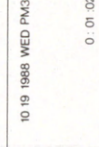
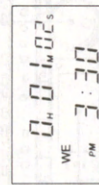
2 Set the year by turning the JOG dial or pressing CHANNEL +/- until "88" appears. Then press NEXT.



3 Set month, day, hour and minute in sequence. First adjust the blinking item by turning the JOG dial or pressing CHANNEL +/-, and then press NEXT.



4 For accurate setting, after adjusting the minute digit, press NEXT at the same time as an announced time signal. The clock will now start and the dots of the colon will alternately blink every 30 seconds.



To readjust the previously set item during clock setting Press BACK. The previously set item will blink and can be readjusted. Press BACK repeatedly until the desired item blinks.

When "AM 12:00" blinks in the display window There has been a power interruption for more than 10 minutes or the power cord has been disconnected for more than 10 minutes. In this case, readjust the clock.

To readjust the date or clock after the setting has been completed Press CLOCK SET. The hour digits will blink. To change the year, month or day, press BACK. Readjustment procedure is the same as above.

Erasing Channels

- 1 Select the channel to be erased.
 - 2 Press ERASE. The "..." indication appears momentarily, indicating that the channel has been erased.
- Repeat steps 1 and 2 for other channels to be erased.

Cable TV Channel Chart*

Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to this chart.

Number on this VCR	1	5	6	14
Corresponding cable TV channel	A-8	A-7	A-6	A
15	16	17	18	19
B	C	D	E	F
25	26	27	28	29
L	M	N	O	P
35	36	37	38	39
V	W	W+1	W+2	W+3
96	97	98	99	100
A-4	A-3	A-2	A-1	W+59
124	125	W+83	W+84	W+82

Check with your local cable TV company for more complete information on the available channels.

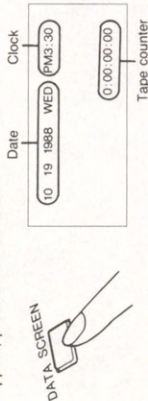
*The designation of the cable TV channels conforms to the EIA/NCTA recommendation.

Note

Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection.

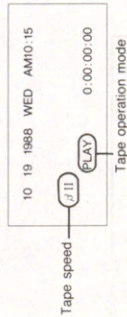
1-12. DATA SCREEN DISPLAY

Once the date and clock are set, the following items will be displayed on the monitor screen. When the display does not appear, press DATA SCREEN.

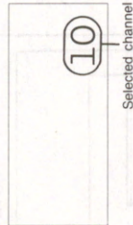


Examples of data screen display

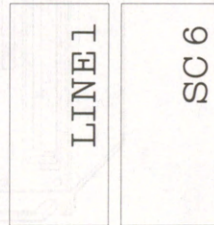
• When a tape starts running



• When a TV channel is selected



• When the input is changed by pressing the INPUT SELECT button

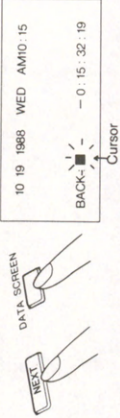


The previous display will resume in five seconds.

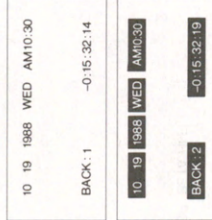
To Select the items to be Displayed

You can select the items to be displayed on the data screen from among date, clock and tape counter, as well as the black background.

1 While pressing NEXT, press DATA SCREEN. The cursor will blink on the screen.

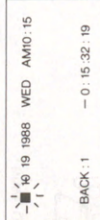


2 Select the background of characters by turning JOG. The background will change each time JOG clicks.



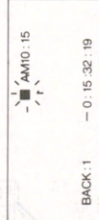
3 Press NEXT.

4 Select if the date is to be displayed or not by turning JOG. The date disappears and reappears each time JOG clicks.



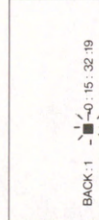
5 Press NEXT.

6 Select if the clock is to be displayed or not by turning JOG.



7 Press NEXT.

8 Select if the tape counter is to be displayed or not by turning JOG.



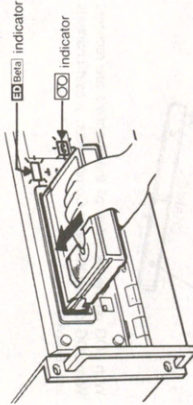
9 Press NEXT.

To turn off the data screen display Press DATA SCREEN.

To reset to the initial display Repeat steps 1 through 9 and display all the items.

1-13. HANDLING THE VIDEO CASSETTES

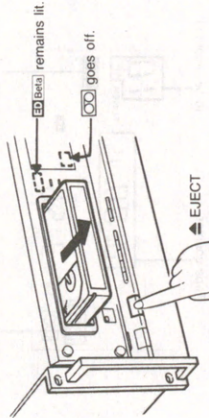
Cassette Insertion



Insert a cassette. The power will be turned on automatically.

The [RECORD] indicator lights when the cassette is in. The [RECORD] or [RECORD] cassette is detected automatically. When a [RECORD] cassette is inserted, the [RECORD] indicator will go off.

Cassette Ejection



Press [EJECT]. The cassette will be ejected. [EJECT] functions even when the power is turned off.

Recording Time Available in Each Mode

By selecting the recording speed, [RECORD] or [RECORD], with the REC MODE button, you can decide the recording time.

Cassette used	[RECORD] and [RECORD] modes (playback only)	[RECORD] mode	[RECORD] mode
EL-250	—	1 hr.	1 hr. 30 min.
EL-500	—	2 hr.	3 hr.
L-125	15 min.	30 min.	45 min.
L-250	30 min.	1 hr.	1 hr. 30 min.
L-500	1 hr.	2 hr.	3 hr.
L-750	1 hr. 30 min.	3 hr.	4 hr. 30 min.
L-830	1 hr. 40 min.	3 hr. 20 min.	5 hr.

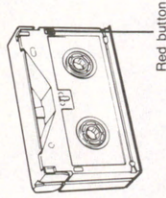
The playback speed is automatically set.

To Avoid Erasing a Recording

When a new recording is made on a pre-recorded cassette, the previous recording will be erased automatically. To avoid erasing a recording, the cassettes incorporate a record prevention system.

[RECORD] Beta cassette

To avoid erasing, depress the red button. To re-record on the cassette, press to release the button.



Conventional [RECORD] cassette

To avoid erasing, break off the safety tab using a screwdriver or similar. To re-record on the cassette, cover the opening where the safety tab has been removed with a piece of plastic tape.



When the inserted cassette is in record prevention mode

- If you activate [RECORD], QUICK TIMER or TIMER REC, THE [RECORD] indicator will blink and the cassette will be automatically ejected.
- If you activate VIDEO or AUDIO INSERT, the [RECORD] indicator will blink and the unit will not enter insert mode. The cassette will not be ejected automatically.

1-14. RECORDING TV PROGRAMS (Beta hi-fi recording)

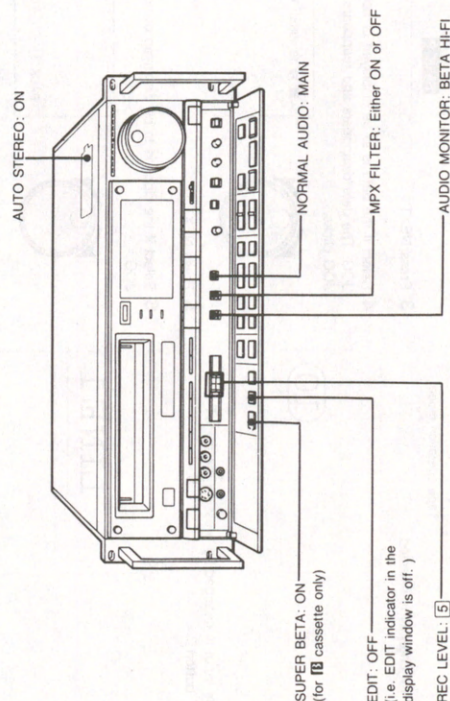
Make sure that you have finished all the connections and adjustments on pages 12 through 21.

Caution

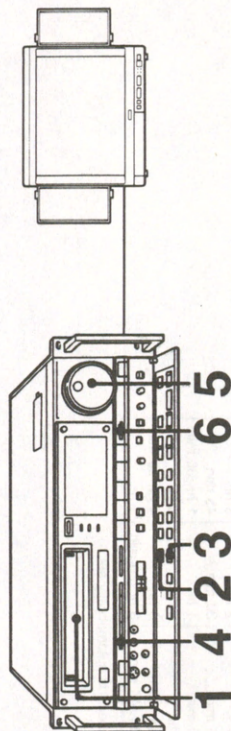
Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws.
Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or program owner.

Before Recording

- Turn on the TV and select the channel for the recorder or select the VCR input on the TV.
- Check the positions of the selectors.

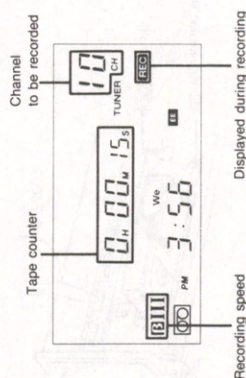


Operation



1	Insert an 10 Beta cassette.	4	Press TV/VTR so that the VTR indicator lights (VTR mode).
2	Select the recording speed, I , II or III , with REC MODE.	5	Select the channel to be recorded with JOG (or CHANNEL + / -).
3	Press INPUT SELECT so that the TUNER indicator appears in the display window.	6	Slide ● REC to the right. Recording will begin.

Check in the display window

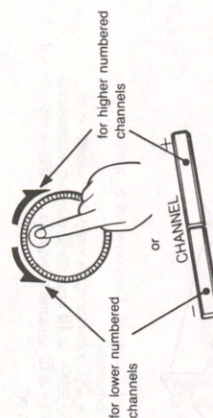


To stop recording, press ■ STOP.
When the tape reaches its end, it will be rewound to the beginning.

To turn off the power, press POWER.

To stop the tape momentarily
Press **II** / **PAUSE/STILL**. The TV program can still be seen on the TV, but the picture will not be recorded.
To resume recording, press **II** / **PAUSE/STILL** again.
To protect the video heads and the tape, the pause mode will be automatically released after about 8 minutes and recording will stop.

How to select the channel



With JOG on the recorder, all the channels are received.
With JOG on the Wireless Commander, preset channels are received.

In case you want to record with a **13** tape which is to be played back on another recorder from the very beginning of the tape, run the tape for about 15 seconds before starting recording. Otherwise you may miss the starting point during playback on the other machine.

Note on SUPER BETA Button

The SUPER BETA button is effective for **13** cassettes only.

For recording

- Set to ON to make high picture quality recordings.
- Set to OFF if you intend to play back the tape on a non-SuperBeta VCR. A tape recorded with the SUPER BETA button set to ON may cause some over-modulation noise when played back on a non-SuperBeta VCR.

For playback

- Normally set to the position in which the tape was recorded.
- Set to ON if the tape was recorded in the **13** mode.
- Set to OFF if the tape was recorded in the **13** mode, or if the tape was recorded on a non-SuperBeta VCR.

To Start Recording from a Particular Point

You can decide the starting point for recording while watching the picture.

- 1 Play back the tape and locate the point where you wish to start recording on the tape.
- 2 Press **II/PAUSE/STILL** to stop the tape where you wish to start recording.
- 3 Slide **REC** to the right. The recorder will enter recording pause mode.
- 4 Press **II/PAUSE/STILL** at the desired point to release the pause mode. Recording will begin.

To Stand by Correctly at the Desired Point

When you started recording of an unnecessary program, you can return the tape to the desired point and set the VCR to recording standby mode.

- 1 Set the VCR to recording pause mode.
- 2 Press **▶PLAY**. The VCR will enter playback pause mode.
- 3 Locate the desired point where you wish to start recording by turning the JOG dial. (See page 25)
- 4 Slide **REC** to the right. The VCR will enter recording pause mode.
- 5 Press **II/PAUSE/STILL** at the desired point. Recording will begin.

To Record Multichannel TV Sound (MTS) Broadcasts (Stereocasts)

In the years to come, an increasing number of programs will be broadcast in stereo. Called Multichannel TV Sound or MTS, the new technology will greatly enhance TV viewing by bringing you programs with high fidelity stereo sound.

MTS also provides for an extra channel called the Second Audio Program or SAP which broadcasters can use to transmit a second language for bilingual transmissions or any other sound track.

To record a stereo broadcast

When a stereo program is received, the STEREO indicator will appear in the display window. With the usual recording procedure, the program will be recorded in stereo on the video track, and in monaural on the conventional audio track.

- Make sure AUTO STEREO in the tuning compartment is set to ON.
- The recording procedure is the same as usual.

Note

If a stereo program is noisy, set AUTO STEREO to OFF. The noise will be reduced though the program is heard in monaural.

To record a SAP (Second Audio Program) broadcast

Set NORMAL AUDIO inside the front panel to SAP. The SAP indicator will appear in the display window.



If recording is made when there is a SAP broadcast, the SAP sound will be recorded on the conventional audio track while the MAIN sound is recorded on the video track in Beta hi-fi. To listen to the SAP sound, set AUDIO MONITOR BETA HI-FI/MIX/NORM to NORM.

To record a MAIN broadcast only

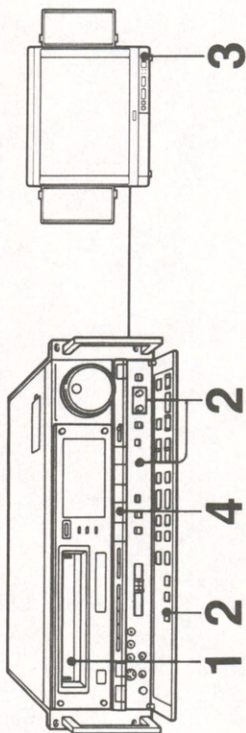
Set NORMAL AUDIO to MAIN. The MAIN sound will be recorded on the video track and the conventional audio track.

Note

When a SAP sound is not recorded, be sure to set NORMAL AUDIO to MAIN. If it is set to SAP and there is no SAP broadcast, no sound is recorded on the conventional audio track.

1-15. PLAYBACK

Operation



1 Insert a B or B cassette.	3 Turn on the TV and select the channel for the recorder or select the input for the recorder.
2 Check the positions of the following controls. • SHARPNESS: center position • TRACKING: center position • SUPER BETA (for B cassette only): Set to the position in which the cassette is recorded.	4 Press ▶ PLAY . Playback will begin.

To Select the Monitor Sound

Playback of Beta hi-fi stereo sound programs

Inside the front panel

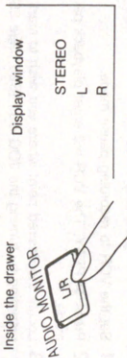


Set **AUDIO MONITOR** or **BETA HI-FI** or **MIX**. When the recorder is connected to a Component TV, a stereo system or stereo headphones, you can enjoy stereo sound reproduction.

When a conventional (monaural) TV is connected, the sound of the left and right channels are mixed so that monaural sound comes from the TV speaker.

To select the left or right channel of stereo programs

Inside the drawer



Select the desired channel by pressing **AUDIO MONITOR** L/R. Each time the button is pressed, the indicator of the selected channel, **STEREO**, L (left) or R (right) will appear in the display window.

Playback of SAP sound

To listen to the SAP sound that was recorded with **NORMAL AUDIO** set to **SAP**, set **AUDIO MONITOR** to **NORM** (for the SAP sound only) or **MIX** (for both the SAP and MAIN sounds).

To View a TV Program during Playback

During playback, press **EE** inside the drawer or on the Wireless Commander. The **EE** indicator will appear in the display window. While the button is kept pressed, the program of the TV channel selected by the **VCR** is seen on the monitor screen.
Release the button to view the playback picture.

When You Play Back a Tape Recorded on Another VCR

- If the VCR on which the tape was recorded is not equipped with the Beta hi-fi system, this recorder will play back the tape in the conventional way automatically. The Beta hi-fi indicator does not light.
- If streaks or snow appears, adjust **TRACKING NORM** for the best possible picture. Return the control to the center position after viewing that tape.
- To get a sharp picture, turn **SHARPNESS** toward **SHARP**.



Auto Play

—To play back a tape from the beginning of the tape after rewinding

Press **▶ PLAY** keeping **◀ REW** depressed. After the tape is completely rewind, it will be automatically played back.

Notes on playback

- When a **B** tape is inserted, the SuperBeta indicator lights automatically. If the tape has been recorded in **B** mode on this VCR or on a non-SuperBeta VCR, press the **SUPER BETA** button to turn off the SuperBeta indicator.
- To change to channel 3 or 2 on your TV from the channel on which you have been viewing something from the video recorder, be sure to press **TV/VTR** first and then change to channel 3 or 2 is set on your TV. If **TV/VTR** is pressed after channel 3 or 2 is set on your TV, you might not get a picture. In this case, change your TV channel to another channel and then come back to channel 3 or 2.

1-16. VARIOUS PLAYBACK MODES

—Using the Buttons on the VCR or Wireless Commander

Digital Betascan

—Viewing the picture at a fast speed to find a particular scene
Keep pressing **FF** or **REW** during playback. When you release the button, the normal playback will be resumed.

Digital Beta SkipScan

—Viewing the picture momentarily during fast-forward or rewind
Keep pressing **FF** or **REW** during fast-forward or rewind mode. When you release the button, the fast-forward or rewind mode will be resumed.

Streaks will appear and sound will be muted in the Betascan and Beta SkipScan pictures. (Especially a wide noise band will appear with a tape recorded in **BI** mode.)



Digital Freeze Picture (playback pause)

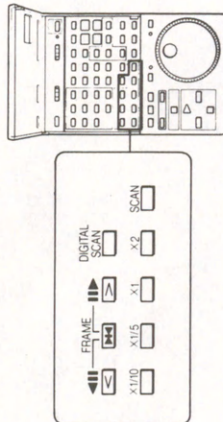
Press **II** / **PAUSE/STILL** during playback. The sound is muted.
Press **II** / **PAUSE/STILL** again or press **PLAY** to resume normal playback.
To protect the video heads and the tape, the pause mode will be automatically released after about 8 minutes and playback will be resumed.

TO OBTAIN BETTER PLAYBACK PICTURE

—In various playback modes

- If the freeze picture appears to shake...
Turn **STILL ADJ** in the tuning compartment until the picture stabilizes.
As long as the same TV or color monitor is used, readjustment should not be necessary.
- If streaks or noise bands appear in freeze, stop-action advance, or 1/10 or 1/5 speed picture...
Set to 1/10 or 1/5 speed picture mode and adjust **SLOW TRACKING** inside the front panel.
- If streaks or noise bands appear in normal (x1) or double speed (x2) picture...
Adjust **NORMAL TRACKING** inside the front panel.

—Using the Buttons on the Wireless Commander only



Stop-action Advance Picture

Press **FRAME** **II** (forward) or **II** (reverse) in freeze picture mode.
Press **PLAY** to resume normal playback.

Variable Speed Playback

Press the desired speed button during playback or in freeze picture mode. The sound is muted (except in x1 picture).

- II**: freeze picture
- x1/10: slow motion picture at 1/10 normal speed
- x1/5: slow motion picture at 1/5 normal speed
- x1: normal speed picture
- x2: double speed picture
- SCAN: continuous Betascan picture

• The x2 button will not function for tapes recorded in the **BI** or **BI**s mode. Though "x2" appears on the monitor screen when x2 is pressed, normal playback will be carried out.

To reverse the direction of the variable speed playback, press **II**. To resume forward playback, press **II**.

To change the playback speed, simply press the desired speed button.

To resume normal playback, press **PLAY**.

Locked Picture Search

—Viewing the picture during fast-forward or rewind
In normal playback or various playback modes, press **II** (**>**) (forward) or **II** (**<**) (reverse) to select the tape transport direction and press **SCAN**. To resume normal playback, press **PLAY**.

Digital Scan

—Viewing a very high speed picture
Press **DIGITAL SCAN** momentarily in fast-forward or rewind mode. To resume normal fast-forward or rewind mode, press **DIGITAL SCAN** again.

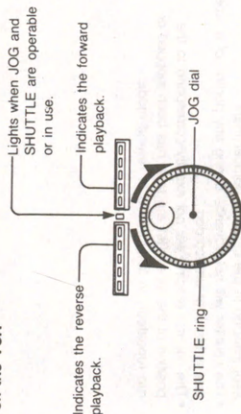
Various Speed Playback Using the JOG Dial and SHUTTLE Ring

Use the JOG dial and SHUTTLE ring either on the VCR or on the Wireless Commander.

To use JOG and SHUTTLE on the Commander

First press the JOG SHUTTLE function button on the Commander so that the associated indicator lights. The VCR will enter the freeze picture mode.

on the VCR



Using the JOG dial

1 Set the VCR to the freeze picture mode.
(Press **II** / **PAUSE/STILL** on the VCR or press JOG SHUTTLE on the Commander.)

2 Turn the JOG dial.
The tape will be played back at the speed at which you are turning the dial (1/10, 1/5 or normal speed). Turn it clockwise for forward playback, or counterclockwise for reverse playback.

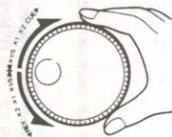


3 When you stop turning the JOG dial, the picture will freeze again.

Using the SHUTTLE ring

1 Set the VCR to the freeze picture mode.
(Press **II** / **PAUSE/STILL** on the VCR or press JOG SHUTTLE on the Commander.)

2 Turn the SHUTTLE ring and hold it at the position where the desired playback speed is obtained. You can select 1/10 (with SHUTTLE on VCR only), 1/5, normal, double or continuous Betascan speed. Turn it clockwise for forward playback, or counterclockwise for reverse playback.



Use the speed indications on the Commander as a guide.

3 When the SHUTTLE ring is released, the picture will freeze again.

Notes on JOG and SHUTTLE

- If JOG and SHUTTLE on the Commander are not used for more than one minute, their function will be released automatically in order to prevent undue battery wear. To use JOG and SHUTTLE again, press the JOG SHUTTLE function button once more.
- JOG and SHUTTLE will function in freeze picture and variable speed playback modes.
- 1/10 speed playback is not possible with SHUTTLE on the Commander.
- The tape transport buttons do not function when JOG or SHUTTLE is in use.

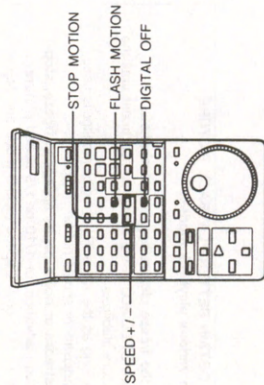
Notes on various playback modes

- In various playback modes, Beta hi-fi is selected automatically and the Beta hi-fi indicator lights even with a non-Beta hi-fi recorded tape. When playing back a non-Beta hi-fi recorded tape, set **AUDIO MONITOR** to **NORM**.
- In various playback modes, some picture frames may be skipped where the tape speed is changed on the tape. This is due to digital image processing.
- The tape speed of x1 and x2 reverse playback in **BI** mode, and the tape speed of x1 reverse playback in **BI** playback and x2 forward playback.
- In digital scan mode, the top and bottom portions of the picture may be defective or the width of the picture may vary.

1-17. VIEWING DIGITAL PICTURE

The digital picture function performs digital image processing of the received TV signals, VCR playback signals or signals from the line inputs, stores the processed signals in the digital frame memory and displays them on the screen.

Use the buttons on the Commander for the digital picture function.



Stop Motion

—to freeze a picture

While viewing a VCR playback, a TV program or a picture from external equipment, press **STOP MOTION**.



The picture freezes. The sound continues to be heard.

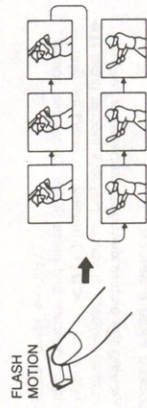
To resume normal viewing
Press **DIGITAL OFF**.

• When the stop motion mode is cancelled, VCR playback is resumed from the advanced portion of the taped program, since the tape continues running even in stop motion mode. In the case of a TV program, the scene being broadcasted will appear.

Flash Motion

—to view freeze pictures successively at specific intervals

While viewing a VCR playback, a TV program or a picture from external equipment, press **FLASH MOTION**.



The picture freezes, and after a given period of time, the next freeze picture will appear. The sound continues to be heard.

To change the intervals at which the freeze picture is switched

By pressing **SPEED +**, the interval becomes shorter, and by pressing **SPEED -**, it becomes longer. Six intervals can be selected between approximately 1/8 and 4 seconds.

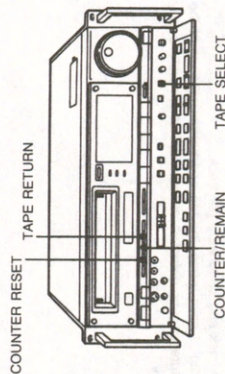
To resume normal viewing
Press **DIGITAL OFF**.

Notes

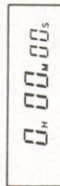
- The digital picture function cannot be activated in various playback modes or recording mode.
- The digital pictures cannot be recorded with this unit. They can be recorded with another recorder, but may not be played back correctly.
- The digital picture obtained from the playback of an external video equipment may be distorted.
- If the Betascan is activated while a digital picture is displayed, normal playback will be resumed.
- When a digital picture function button is pressed with no video signal input, the picture may not be stored correctly or the previously stored picture may appear on the screen.

1-18. USE OF THE TAPE COUNTER

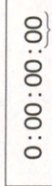
The tape counter indicates the approximate running time of the tape and the relative position of programs on the tape.



Display window



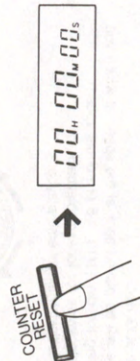
Data screen



Frame digits

To Index the Tape Contents

Before starting recording or playback, press **COUNTER RESET** to set the counter to zero. By noting the counter reading at the desired point, you can easily find that point later by referring to the counter. Use the label on the cassette to list the programs and their counter readings.



Notes on counter reading

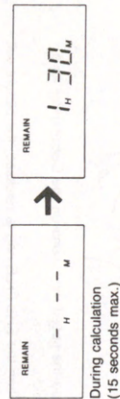
- The counter reading is automatically reset to zero when a cassette is newly inserted.
- The counter reading will be retained in the memory even after the power is turned off, as long as the cassette is kept inserted in the cassette compartment.
- The counter will not advance during any portion of a tape that is blank or unrecorded.
- The counter reading will not exactly correspond to the position of the tape after the tape has been stopped or run repeatedly in fast-forward or rewind mode.

To Determine the Remaining Recording or Playback Time

- 1 Set **TAPE SELECT** inside the front panel according to the length of the tape being used.
L500: for EL-500, EL-250, L-500, L-250 and L-125 cassettes
L750: for L-750 cassettes
L830: for L-830 cassettes



- 2 During recording or playback, press **COUNTER/REMAIN** (or **TAPE REMAIN** on the Commander). The unit will calculate the remaining recording or playback time, and then the remaining time will be displayed.



During calculation
(15 seconds max.)

The remaining time will decrease as the recording or playback goes on.

To display the normal tape counter, press **COUNTER/REMAIN** (or **TAPE REMAIN**) again.

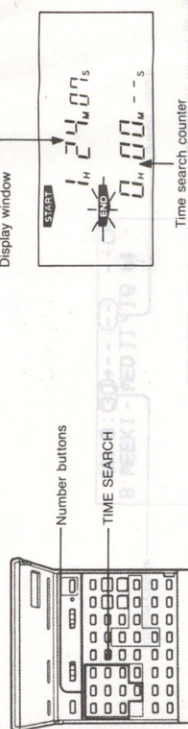
1-19. TIME SEARCH

The tape can be advanced rapidly or rewound for the required length of time. This function is useful for verifying the picture on the specified point of the tape.

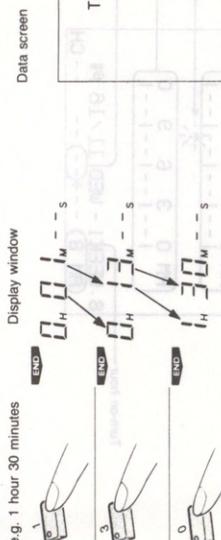
To set the length of time, use the Wireless Commander.

1 Stop the tape.

2 Press TIME SEARCH on the Commander.



3 Set the time (hour and minutes) for which you want to advance or rewind the tape by pressing the number buttons on the Commander.



If an incorrect digit is input, press "0" twice and then press the correct number button.

4 Press ►► FF or ◄◄ REW.

To start playback automatically from the assigned point
Press ►► PLAY after pressing ►► FF or ◄◄ REW. The indicator on ►► PLAY will blink.

To cancel the time search operation before pressing
Press ►► FF or ◄◄ REW.
Press TIME SEARCH again.

The tape will stop automatically at the time search counter zero point.
The time search counter will immediately change to the clock display.

Tape Return/Tape Return Play

Tape return

—To stop the tape at a particular point or play back from a particular point

1 During recording or playback, press COUNTER RESET at the point you want to locate later.

2 When recording or playback is finished, press ■ STOP and press TAPE RETURN.

The tape will be rewound or advanced close to the counter zero point.



Tape return play

—To start playback automatically from the counter zero point

Press ►► PLAY after pressing TAPE RETURN. The indicator on ►► PLAY will blink and the ◄◄ indicator will light when the tape is being rewound.



Note

The tape return and tape return play cannot be activated when the counter reading is within $\pm 0:00:04s$.

Notes

- The remaining time will be changed to "H:M" when the unit is set to x1 reverse playback in 01, 01s or 01M mode, Betascan in 01I mode, or x2 reverse playback.
- The remaining time may not be calculated correctly if a blank portion of the tape (with no CTL signal recorded) is played back or the recorded tape speed is changed.
- The remaining tape counter will stop when the VCR is set to one of the following modes: stop, freeze picture, stop-action advance picture, slow motion picture, Betascan in 01I or 01M mode, x2 reverse playback, and x1 reverse playback in 01I mode. If normal or x2 playback is activated after these modes are set, the counter may take several seconds to restore the correct display.

Notes on the accuracy of the remaining time counter

- The accuracy of the remaining time counter will vary depending on the type of the tape being used.
- For commercially available recorded tapes, the counter will not indicate the exactly same time as the recorded time labeled on the tape.
- For damaged tapes and non-standard tapes, the accuracy will be degraded.
- At the beginning of a tape, especially when the tape has just been rewound, the remaining time will be calculated greater than the actual time (by several minutes max.).

1-20. TIMER ACTIVATED RECORDING

Eight recordings can be preset to be made between today and Saturday of the week after next.

Today													
Su	Mo	Tu	We	Th	Fr	Sa							
			1	2	3	4							
5	6	7	8	9	10	11	This week						
12	13	14	15	16	17	18	Next week						
19	20	21	22	23	24	25	The week after next						
26	27	28	29	30									

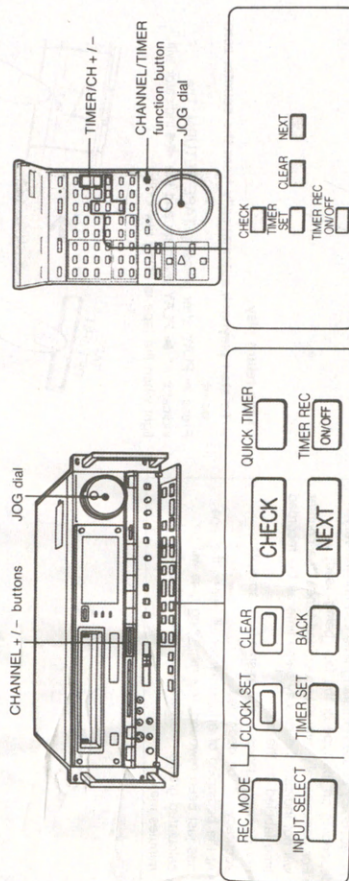
The date and clock must be set correctly. For the setting, see page 20.

Check before setting the timer

- Make sure the cassette tape is long enough to record all the programs.
- Be sure that the cassette is not in record prevention mode.
- Set the selectors and controls as in "Before recording" on page 22.

Buttons for timer setting

You can use the buttons and JOG dial either on the recorder or on the Wireless Commander.



CHANNEL +/- buttons (or TIMER/CH +/- buttons on the Commander)

To set the week and day, the turn-on and turn-off times and the channel, press "+" to advance, and "-" to reverse.

JOG dial

To set the week and day, the turn-on and turn-off times and the channel, turn clockwise to advance, and counterclockwise to reverse. When using the JOG dial on the Commander, first press the CHANNEL/TIMER function button.

NEXT button

Every time you press the NEXT button, the item to be set will blink.

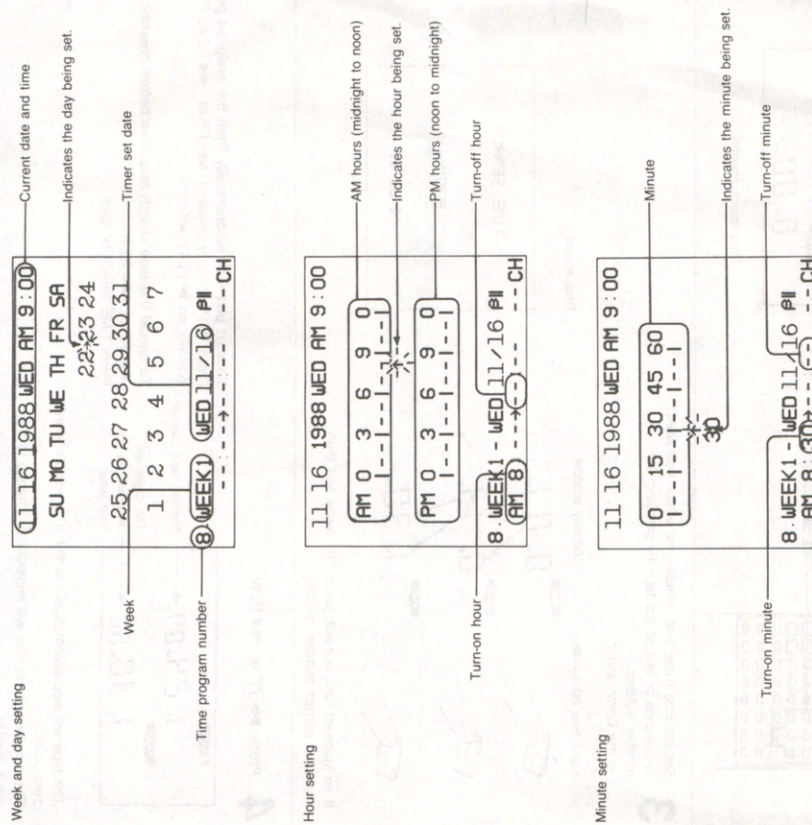
BACK button

To change the item set in the previous step, press this button until the desired item blinks.

CLEAR button

To cancel the timer setting mode during setting, press this button to turn off the TIMER indicator.

Data screen display for timer setting
To obtain the data screen display, press DATA SCREEN inside the drawer or on the Commander.



Timer Setting

Suppose you want to make a recording of channel 8 from 7:30 P.M. to 8:56 P.M. today (Wednesday, November 16).

Operation	Display window	Data screen
1 Press TIMER SET .		
2 Select REC MODE , III or III .		
3 Set the week and day with +/ - or JOG . (See "To set the week and day" on page 44. Then press NEXT .)		
4 Set the turn-on hour with +/ - or JOG . AM 12:00 = midnight PM 12:00 = noon Then press NEXT .		
5 Set the minute with +/ - or JOG . Then press NEXT .		
6 Set the turn-off hour with +/ - or JOG . Then press NEXT .		
7 Set the minute with +/ - or JOG . Then press NEXT .		
8 Set the channel to be recorded with +/ - or JOG . Then press NEXT .		
9 Press TIMER REC . The power will be turned off and the recorder will enter the standby mode.		

To preset another program, repeat steps 1 to 8. Up to 8 programs can be preset.

Preset turn-on time of program 1
Current time

Recording will start at the preset time and will automatically stop when the recording is completed. The memory of the program will be erased if it is for only one day and the timer program numbers will advance one by one.

NOTICE:
ONCE THE **TIMER** INDICATOR HAS BEEN DISPLAYED, only the functions of **CHECK** and **TIMER REC** can be activated. For the usual manual operations, press **TIMER REC** again so that the indicator goes off, and then turn on the power.

Notes on timer setting

- To change the item set in the previous step, press the **BACK** button until the desired item blinks.
- Timer recordings of the signals input from the **LINE IN 1** or **LINE IN 2** jacks can be made. During timer setting, select the **L1** or **L2** LINE input with the **INPUT SELECT** button and skip step 8.
- Timer setting can be made during playback, if the recording tape speed for timer programs is the same as that of the on-going playback. The other tape speeds cannot be preset.
- REC MODE** and **INPUT SELECT** can be set any time during timer setting. When a timer recording starts, the preset modes are selected automatically.

To set the week and day

The week and day indications change in the direction of the arrow, starting from today, when you press **+/ -** or turn **JOG** clockwise; and in the reverse direction when you press **- / +** or turn **JOG** counterclockwise.

The day(s) you want the recording(s) made	Display window	Data screen
At the same time every day from Monday to Saturday	EVERY WEEK Mo Tu We Th Fr Sa	MON-SAT
At the same time every day from Monday to Friday	EVERY WEEK Mo Tu We Th Fr	MON-FRI
At the same time on the same day every week	EVERY WEEK Su ... Fr	EVERY-SUN ... SAT
At the same time every day	Su Mo Tu We Th Fr Sa	EVERY-DAY
Only one day	THIS WEEK [Su] [Mo] [Tu] [We] [Th] [Fr] [Sa] (today)	WEEK 1 WED → THU → SAT (today)
	NEXT WEEK [Su] [Mo] [Tu] [We] [Th] [Fr] [Sa]	WEEK 2 SUN → SAT
	WEEK AFTER NEXT [Su] [Mo] [Tu] [We] [Th] [Fr] [Sa]	WEEK 3 SUN → SAT

Troubles when **TIMER REC** is pressed

The cassette will be ejected automatically.

The cassette inserted is in record prevention mode (i.e. the red button is depressed for an **II** Beta tape, or the safety tab is removed for a **II** tape.)

No cassette is inserted.

The tape is at its end.

The turn-on time has been set before the current time.

Before the Timer-Activated Recording Starts

To check the timer settings

Every time you press CHECK, each program will be displayed in the display window or the selected program number will blink on the data screen.

After checking the desired settings, press CHECK repeatedly until the current time appears in the display window.

To change the settings

- 1 Press TIMER REC. The [TIMER] indicator goes off.
- 2 Press CHECK to select the program to be changed.
- 3 Press TIMER SET.
- 4 Press NEXT until the item to be changed blinks.
- 5 Change the setting with + / - or JOG.
- 6 Press NEXT so that the tape counter and the current time appear in the display window.
- 7 Press TIMER REC again to reactivate the timer.

To erase the memory of a particular program

- 1 Press TIMER REC. The [TIMER] indicator goes off.
- 2 Press CHECK to select the program to be erased.
- 3 Press CLEAR. The memory of the program will be eliminated.
- 4 If other programs have been preset for recording, press TIMER REC again to reactivate the timer.

During Recording

To stop during the timer recording
Press TIMER REC. The recording will stop and the power will be turned off.

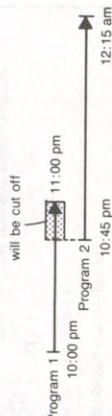
When the tape ends during timer recording
The tape stops but the tape will not be rewind.

The [STOP] and [PAUSE/STILL] buttons do not function during a timer recording.

Specific Notes on Timer-Activated Recordings

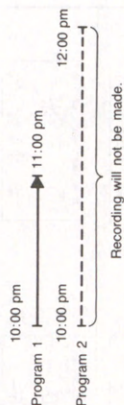
When the presettings of your timer-activated recordings overlap

The presetting of program 2 will begin before program 1 is finished.



If the turn-on time of two programs are the same

The recording of the program having the lower program number will be made. The memory of the program having the higher number will be cleared.



If the turn-on time of one program is the same as the turn-off time of another program

When a timer recording starts, the unit is set to recording pause mode 6 seconds before the preset turn-on time. The pause mode is released exactly at the preset turn-on time and recording starts approximately 1 second later. Therefore, the end of the first program will not be recorded for 6 seconds. Both recordings, however, will be made smoothly.

If a power interruption occurs before a timer recording
The clock will stop and "AM 12:00" will blink. This means that the memory of the timer programs has been completely erased. Reset the clock and timer programs.

A short power interruption of less than approximately 10 minutes will not affect the memory. The clock will show the correct time and the timer programs will be performed.

If the power was interrupted during a timer recording or quick timer recording

Recording will stop and the power will be turned off. If the interruption was less than approximately 10 minutes, the recording will resume.

Note

After a power interruption, SUPER BETA is automatically set to ON even if it was set to OFF. Press SUPER BETA inside the drawer to turn off the SuperBeta indicator.

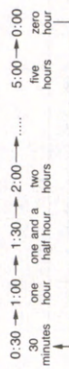
1-21. QUICK TIMER RECORDING

Use this function to begin recording a program immediately. You can start timer recording just by pressing QUICK TIMER.

The recording duration can be set for up to 5 hours by 30 minutes. You can also use this function to stop the non-timer recording by presetting the recording duration. Before operating, set the clock.



Recording duration indication
Every time you press QUICK TIMER, the recording duration indication changes as follows:



When the recording starts

The duration indication decreases minute by minute to 0:00 and the power will be turned off automatically about 30 seconds after the recording has finished.

When the tape reaches its end during quick timer recording

The recording stops and the power is turned off. The tape will not be rewind.

To Use Quick Timer While Recording

By pressing QUICK TIMER, you can set the duration so that the recording stops and the power turns off after the preset duration.

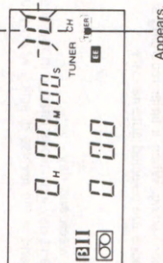
Once the quick timer recording has started

Only the following function buttons can be activated:
QUICK TIMER..... to change recording duration
TIMER REC..... to interrupt quick timer recording
[PAUSE/STILL]... to stop quick timer recording momentarily

CHECK..... to check timer programs preset
COUNTER RESET..... to reset the tape counter to zero
INDEX MARK..... to record an index signal

- 1 Press QUICK TIMER.
The power will be turned on, if it was turned off.

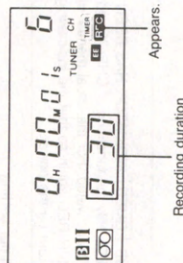
The channel previously selected blinks.



If you do not advance to the next step within 30 seconds, the power will be turned off.

- 2 Choose the channel to be recorded with JOG or CHANNEL +/-.

- 3 Press QUICK TIMER so that the recording starts. Now decide the recording duration.

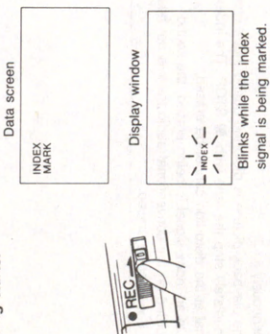


1-22. INDEX FUNCTION

The desired program can be easily located by the index signal marked on the tape.

To Mark Index Signals Automatically

An index signal is automatically marked on the tape when **REC** is slid to the right or when a timer recording starts.



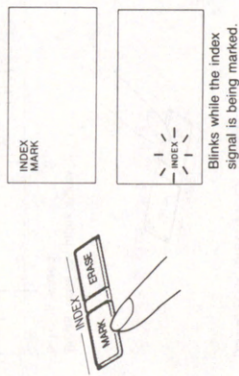
Notes

- Index signals will not be marked automatically on the tape when the recording is started by releasing the recording pause or playback pause mode.
- The index function operates also with the index signals marked using the index function of other recorders.

To Mark Index Signals Manually

Index signals can be marked at any desired point on the tape during recording, timer recording or normal playback.

At the point where an index signal is to be marked, press INDEX MARK.



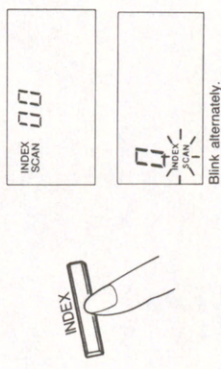
Notes

- An index signal will be recorded for the following period according to the tape speed.
III: Approx. 4 sec.
II: Approx. 8 sec.
I: Approx. 12 sec.
- The sound recorded on the conventional audio track will be muted while the index signal is being marked during playback, but the recording will not be affected.
- Index signals can be marked on cassette tapes having the record prevention system engaged (including commercially available prerecorded video tapes).
- An index signal cannot be marked on the unrecorded portion of the tape where no control signal has been recorded.
- An index signal may not be marked immediately before a point on the tape where the tape speed (**III**, **II** or **I**) changes.

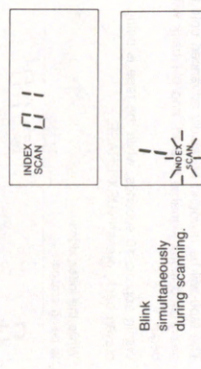
Index Scan

—To play back the beginning of each program in sequence

- 1 Insert a cassette that has index signals marked.
- 2 Press INDEX once.



- 3 To scan the previous programs, press **◀ REW**. To scan the programs ahead, press **▶ FF**. The tape will be rewound or rapidly advanced to the next index signal marked.



The tape will be played back for approximately 10 seconds, and then rewound or advanced to the next index signal.

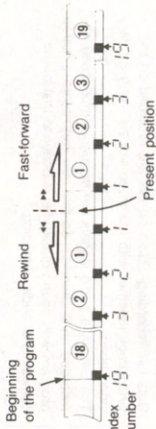
Every time an index signal is detected and playback begins, the displayed index number increases.

- 4 At the desired program, press **▶ PLAY**. Normal playback of that program will begin.

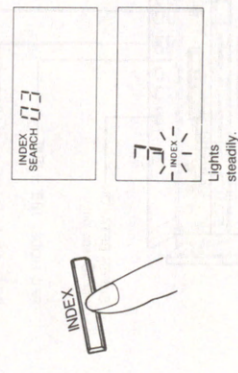
Index Search

—To locate the desired program

You can locate the desired program and play it back automatically by designating the number of its index signal. Up to the 19th index signal from the present position on the tape can be located.



- 1 Insert a cassette that has index signals marked.
- 2 Press INDEX several times until the index number of the desired program is displayed.
For instance, to locate the second program ahead, two index signals should be detected, so press INDEX until "2" is displayed. On the other hand, to locate the second program behind, three signals should be detected, so press the button until "3" is displayed.



- If you enter an incorrect index number, press **■ STOP** to reset the display.

- 3 To locate a previous program on the tape, press **◀ REW**.

To locate a program ahead, press **▶ FF**.

The tape will be rewound or rapidly advanced. Every time an index signal is detected, the displayed number will decrease. When the number reaches 0, playback of your desired program will begin.

Notes

- The index scan and index search can be activated during playback, as well as from stop mode.
- While the index signals are being scanned or located, the recorder is set to EE mode.
- If the tape is rewound to the beginning during index scan or index search, playback will begin automatically.
- If the tape reaches the end during index scan or index search, the tape will be rewound automatically.

When the desired program cannot be played back with the index function

Is there a space of more than 2 minutes between two index signals? If there is more than one index signal marked within an interval of 2 minutes of the normal tape run, the mechanism may not function properly.

1-23. BETA HI-FI AUDIO RECORDING

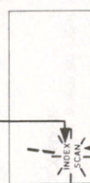
To Erase Index Signals

Erasing while index scanning—To erase the index signals in sequence

- 1 Stop the tape with ■ STOP.
- 2 Press INDEX ERASE.
- 3 Press ◀ REW or ▶ FF.
The tape will be rewound or rapidly advanced to the next index signal and playback will begin.
- 4 Within approx. 10 seconds, while the tape is being played back, press INDEX ERASE.



Blinks, while the index signal is being erased.



Lights steadily.

After the erasure, index scan will resume. At each index signal located, press INDEX ERASE.
To stop index scanning, press ■ STOP.

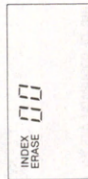
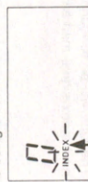
Notes

- Press INDEX ERASE more than 2 seconds after the playback starts.
- The index signal cannot be erased if it is recorded immediately after an unrecorded portion on a tape, or on a portion where the recording tape speed has been changed or two recordings have been made continuously.
- If the playback picture is distorted during index erasing, immediately stop the tape with ■ STOP. The index signal at the distortion cannot be erased.
- While an index signal is being erased, the sound recorded on the conventional audio track is not heard, but it will not be erased.

Erasing while index searching—To erase a particular index signal

- 1 Stop the tape with ■ STOP.
- 2 Press the INDEX button several times until the number of the index signal to be erased is displayed.
- 3 Press ◀ REW or ▶ FF.
The tape will be rewound or rapidly advanced until the designated index signal is located, and playback will begin.
- 4 Within approx. 10 seconds, while the tape is being played back, press INDEX ERASE.

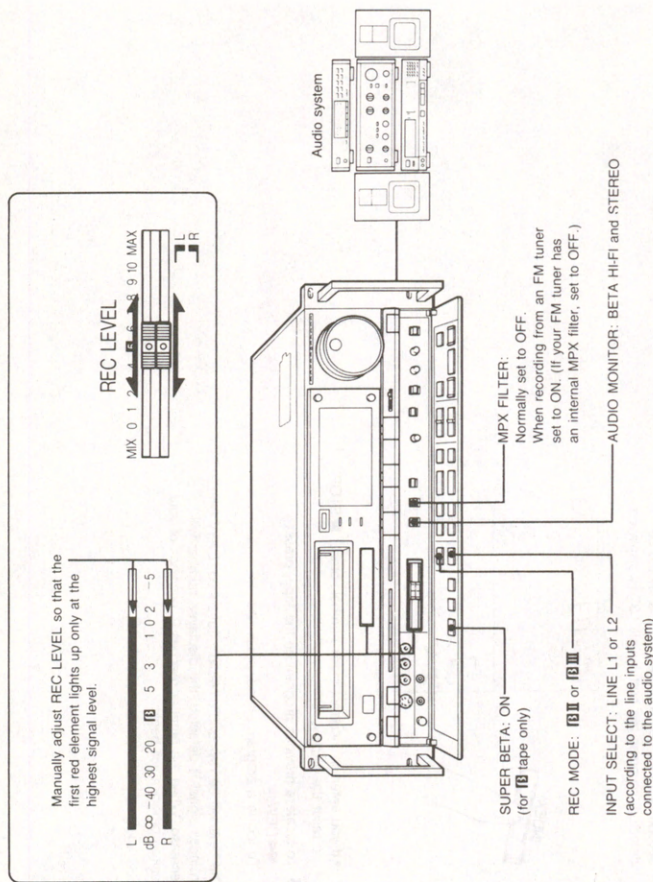
While the index signal is being erased



After the erasure, normal playback will begin.

Recording from Your Audio System

To connect the VCR to your audio system, see page 18. Set the switches as shown below. To start recording, insert a cassette and slide ● REC to the right.

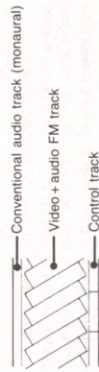


What is Beta Hi-Fi Recording?

In conventional recording, audio signals are recorded on the audio track and video signals on the video track. In Beta hi-fi recording, audio signals are recorded on the video track together with the video signals using 2 rotary video heads.

The Beta hi-fi audio signals are frequency-modulated and recorded on 2 channels, so that you can record a stereo program with sound quality far superior to that of the conventional audio recording.

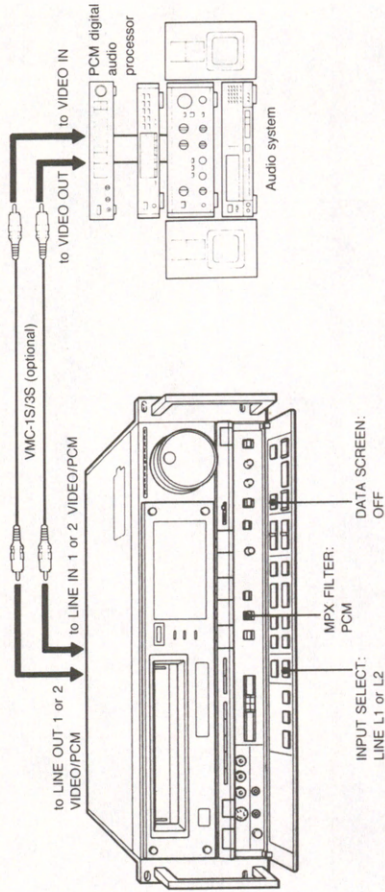
Beta hi-fi recording pattern on the video tape



This recorder automatically records audio signals on the video track (Beta hi-fi recording) and on the conventional audio track at the same time, so that these tapes can also be played back on any ordinary video cassette recorder without a Beta hi-fi system.

1-24. PCM RECORDING AND PLAYBACK

Connect a PCM digital audio processor as shown below.



For optimum results, use a video cassette with a model number of L-500 or below (EL-500, EL-250, L-500, L-250, L-125, etc.) and select the tape speed **B II**. For details, refer to the instruction manual furnished with the digital audio processor.

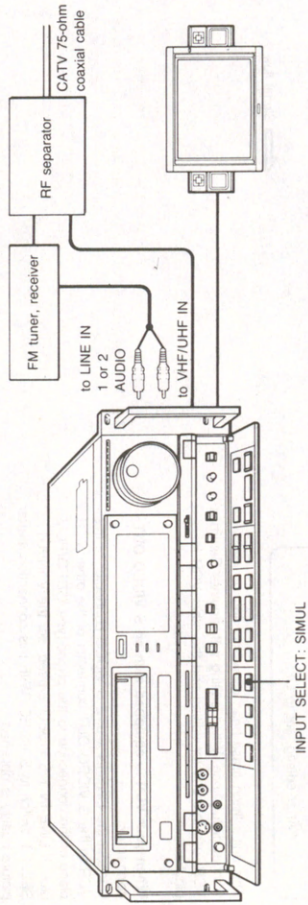
Notes

- If you intend to play back on other non-SuperBeta VCRs, or on a VCR with SUPER BETA set to "OFF", set SUPER BETA to "OFF" when making your PCM recordings. Otherwise, the sound may be muted.
- When MPX FILTER is set to PCM and playback starts, the data screen display will disappear automatically. It will be recalled when MPX FILTER is set to ON or OFF after the playback.

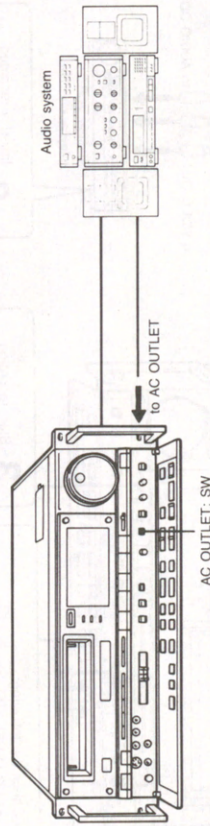
FM Simulcast Recording

By connecting an FM tuner to the LINE IN 1 or 2 AUDIO jacks besides the CATV cable connection, you can record a cable TV program with stereo sound, such as MTV (music TV), whose audio signals are divided into the FM tuner from the cable.

For FM simulcast recording, press INPUT SELECT so that "SIMUL" appears in the display window.



Timer-Activated FM Recording



- 1 Connect the audio system to the AC OUTLET on the rear of the recorder.
- 2 Set the AC OUTLET selector to SW.
- 3 Turn on the recorder and the audio system.
- 4 Tune in the desired FM station on the FM tuner.

At the preset turn-on time, the recorder and the audio system will be turned on and recording will start.

1-25. TAPE EDITING

To edit a home movie tape, you need two video cassette recorders.

If your other VCR is a Sony VCR equipped with control terminals, see page 55 for further systematic operations.

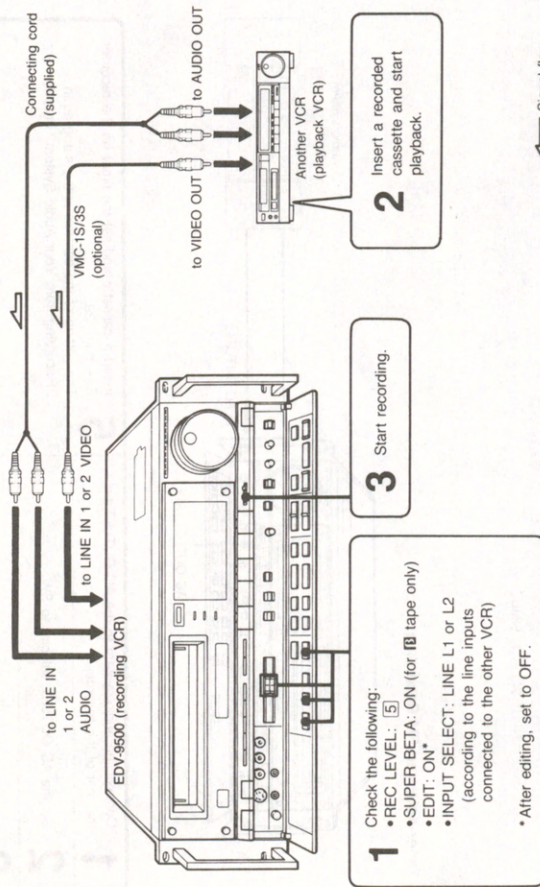
CAUTION

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized duplication of such material may be contrary to the provisions of the copyright laws.

Note

Avoid repetition of editing tapes, as the picture and tone quality will be impaired noticeably for newly edited tapes.

To Edit a Home Movie Tape from Another VCR to This VCR



This unit's flying erase head allows continuous recordings without disturbance. When editing with another Belamax VCR, use this unit for editing and the other VCR for playback.

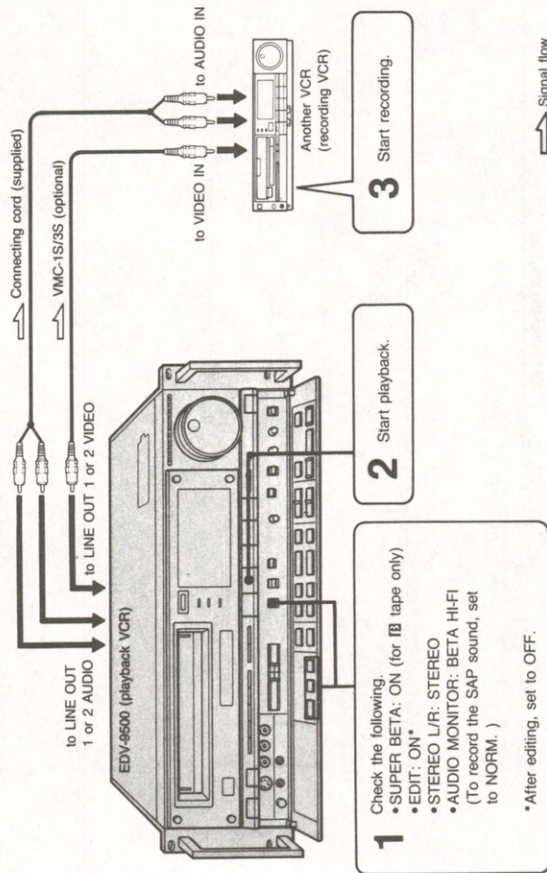
When your VCR is equipped with an S VIDEO OUT connector

Connect the LINE IN 1 or 2 S VIDEO connector of this VCR to the S VIDEO OUT connector of the other VCR in place of the connection to the phono-type VIDEO/PCM jack. If LINE IN 1 S VIDEO is used, set the V INPUT SELECT switch to S VIDEO. With this connection, better picture quality is obtained.

Note

Do not connect the same VCR to both the LINE IN and LINE OUT jacks of this VCR. This may cause hum noise.

To edit a Home Movie Tape from This VCR to Another VCR



1-26. VARIOUS TAPE EDITING MODES

This VCR is equipped with various functions for easy and highly-accurate tape editing. If another Sony VCR with intercomponent control terminals is used with this VCR, further editing facilities are available.

Equipment to be used with	Available editing method	When to use	Page
Another EDV-9500 or Sony SL-HF1000 (equipped with a control T jack)	Automatic Assemble Editing with Pre-roll	• To record up to 8 scenes successively	37
	Automatic Insert Editing with Pre-roll	• To replace part of a pre-recorded tape with a new scene and sound	39
Sony VCR equipped with a control terminal	Automatic Assemble Editing (without Pre-roll)	• To record up to 8 scenes successively	37
	Manual Insert Editing	• To replace part of a pre-recorded tape with a new scene and sound • To add music or narration onto a pre-recorded tape	41

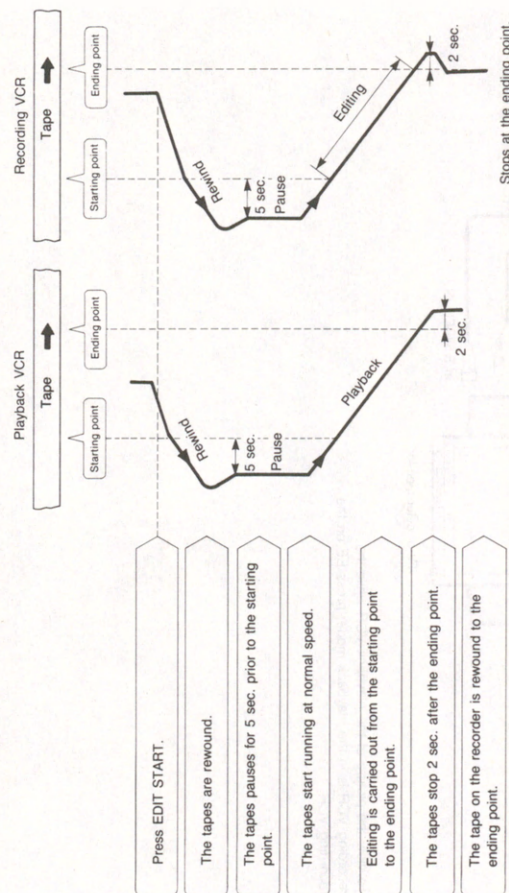
1-27. EDITING WITH ANOTHER EDV-9500 OR SL-HF1000

What is a Pre-roll?

"Pre-roll" is to run the original tape and a tape to be edited for several seconds before the preset editing starting point. During this period of pre-roll, two VCRs are fully controlled for synchronized operations, thus making possible highly accurate editing with a maximum error of 3 frames per scene.

Pre-roll operation is carried out in automatic insert editing and automatic assemble editing, only when another EDV-9500 or Sony SL-HF1000 is connected to this VCR through the control T jacks.

Operation chart of pre-roll editing



Notes

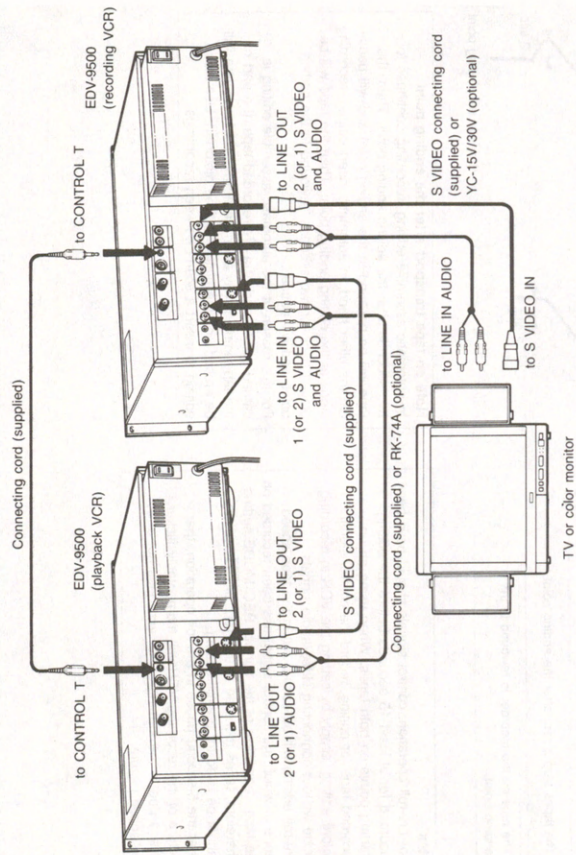
- For pre-roll operation, control signals should have been recorded for at least 15 seconds before the editing starting points on both tapes. When using an un-recorded tape for editing, record the control signal before editing, simply by setting the VCR to recording mode without connecting video/audio signals.
- Pre-roll editing will be carried out in the tape speed mode in which the control signal has been recorded on the tape, regardless of the current REC MODE setting. Therefore, tapes recorded in the **181** or **181S** mode cannot be used for pre-roll editing.
- After the 5-second pause in pre-roll operation, the picture of the recording VCR will momentarily flicker. This is due to the framing servo, and does not affect the edited picture.

Note on tape transport after the ending point

In automatic assemble editing, recording continues for two seconds after the editing ending point. Then, the tape will be rewind to the ending point and will pause. On the other hand, in automatic insert editing, recording stops at the editing ending point. Then the tape will be played back for two seconds, rewind to the ending point, and will pause.

For this reason, if the automatic assemble editing is carried out on part of a pre-recorded tape, the part of the tape immediately after the newly inserted scene will be erased and the picture will be distorted. Use insert editing to insert a scene between recordings.

Connection Using one Monitor TV for Two VCRs



To view the picture of the playback VCR while the recording VCR is in the playback mode, press EE on the recording VCR.

Notes on S VIDEO connection

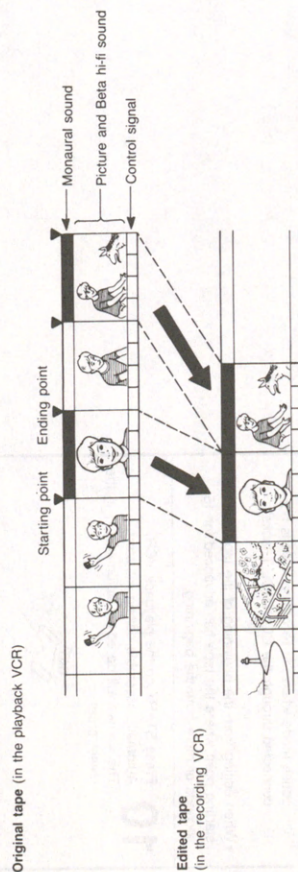
- When using the LINE IN 1 S VIDEO connector, set the V INPUT SELECT switch to S VIDEO.
- When the LINE IN 2 S VIDEO connector is used, the phono-type LINE IN 2 VIDEO jack is disconnected automatically.

Notes on S VIDEO connection

- When using the LINE IN 1 S VIDEO connector, set the V INPUT SELECT switch to S VIDEO.
- When the LINE IN 2 S VIDEO connector is used, the phono-type LINE IN 2 VIDEO jack is disconnected automatically.

1-28. AUTOMATIC ASSEMBLE EDITING

Up to 8 desired scenes of the original tape can be "assembled" (recorded) onto another tape successfully. The video, audio and control signals are edited together. Simply press one button to start the assemble editing. Recording start/stop is activated automatically, synchronized with playback start/stop.



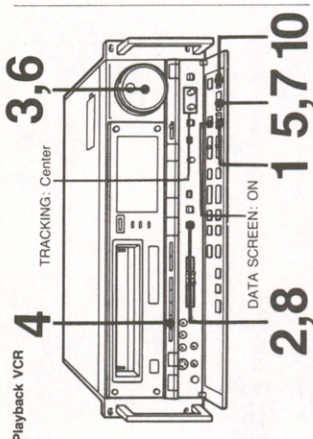
Notes

- Automatic assemble editing cannot be made from an original tape recorded in **IB1** or **IB1S** mode, when this VCR is used as the recording VCR.
- If editing is made from an original tape with **IB1** and **IB1S** recordings mixed, the picture and sound may be distorted at the starting and ending points of editing.

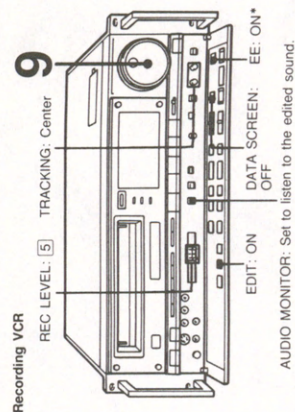
For pre-roll operation, control signals should have been recorded for at least 15 seconds before the starting points of the automatic assemble editing on both tapes. If required, record the control signal before operating the automatic assemble editing.

Operation

For assemble editing, assign the editing points on the playback VCR.



The item to be set will blink in the display window and on the data screen.



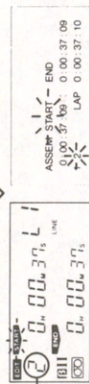
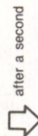
AUDIO MONITOR: Set to listen to the edited sound.
*When a monitor TV is not connected to the playback VCR only, press EE to view the picture from the playback VCR.

1 Insert the original cassette (edit source cassette) into the playback VCR and press ASSEMBLE. The EDIT switch is automatically set to ON and the EDIT indicator lights. Display window Blinks. Data screen on the monitor connected to the playback VCR Blinks.	4 Press COUNTER RESET. The starting point of scene 1 is registered as counter zero.
2 To listen to the sound while editing, set AUDIO MONITOR to NORM. The sound recorded on the conventional audio track will be heard while JOG/SHUTTLE is being turned.	5 Press MARK. The starting point is now memorized.
3 On the playback VCR, locate the starting point of scene 1 observing the playback picture, and set the VCR to playback pause mode. For accurate searching, use JOG/SHUTTLE.	6 Locate the ending point of scene 1 and set the playback VCR to playback pause mode.

7 Press MARK.



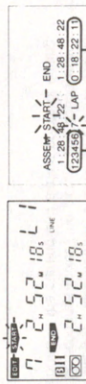
The ending point is now memorized.



Scene 2

8 For other scenes, repeat steps 3, 5, 6 and 7 to set the starting and ending points in the memory. Up to 8 scenes can be preset.

e.g. When 6 scenes have been preset



Shows the total duration of all the preset scenes.

9

On the recording VCR, locate the point on the tape where you want to start editing and set the VCR to **playback pause mode** (or recording pause mode when the recording VCR is not connected through the CONTROL T jacks).

- When editing from the beginning of the tape, set the starting point where the tape has advanced for 15 seconds or more from the beginning.

10

Press **START** on the playback VCR. Automatic assemble editing will start. The scenes will be edited automatically in the preset order.



When all the scenes have been edited, both VCRs will be set to playback pause mode.

To stop the automatic assemble editing momentarily, press **II/III/PAUSE/STILL**. To resume the editing, press **START**.

To change the previously set editing points during presetting, press **BACK** until the desired item blinks, and then locate the correct point and press **MARK**.

To cancel the automatic assemble editing mode, press **ASSEMBLE**. The memory of the preset scenes will be erased.

Notes

- Automatic assemble editing is not possible for the two scenes between which searching time takes more than 8 minutes.
- Automatic assemble editing will not be carried out if the recording VCR is set to assemble editing mode.

For Accurate Presetting of Editing Points

- If you stop the tape with **STOP** when presetting an editing point, the editing point will be shifted. To correct the shift, locate the starting point of scene 1 again and press **COUNTER RESET**.
- The preset starting and ending points may shift slightly after the tape has been advanced rapidly, stopped and rewound repeatedly for locating those points.

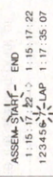
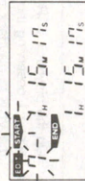
To minimize the shift, proceed as follows:

- 1 After locating the starting point of scene 1, press **COUNTER RESET** to register that point as counter zero.
- 2 Preset all the required scenes.
- 3 Locate the starting point of scene 1 again, accurately to the extent of a frame, by observing the playback picture.
- 4 Press **COUNTER RESET**.
- 5 Press **START** to start the automatic assemble editing.

After Presetting the Editing Points —before pressing **START**

To check the preset editing points

Press **CHECK**. Every time **CHECK** is pressed, the starting and ending points of each scene will be displayed and the scene number will blink.



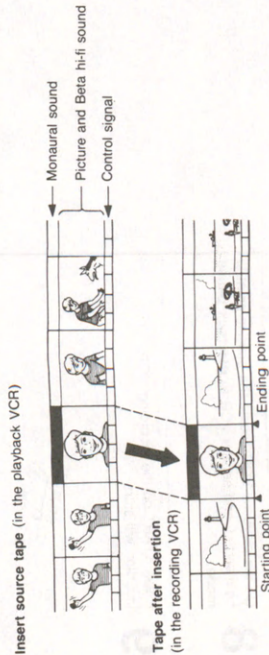
To change the editing points

- 1 Press **CHECK** repeatedly until the desired scene number blinks.
- 2 Press **ASSEMBLE**. The **START** indicator will blink.
- 3 Locate the new starting point using **JOG/SHUTTLE**, while observing the playback picture, and set the unit to playback pause mode. (If the starting point is not to be changed, skip this step.)
- 4 Press **MARK**. The **END** indicator will blink.
- 5 Locate the new ending point using **JOG/SHUTTLE** and set the unit to playback pause mode. (If the ending point is not to be changed, skip this step.)
- 6 Press **MARK**.

1-29. AUTOMATIC INSERT EDITING

"Audio insert", "video insert", or "audio and video insert" can be made with this operation.

You can easily insert (re-record) new sound and/or picture onto a pre-recorded tape. Assign the editing points on the recording VCR and press one button to start automatic insert editing. Playback start/stop is activated automatically, synchronized with recording start/stop.



Audio/Video Insert Modes

	Insert onto a Beta hi-fi recorded tape	Insert onto a non Beta hi-fi recorded tape
Audio Insert	Original picture and Beta hi-fi sound Newly inserted monaural sound	Original picture Newly inserted monaural sound
Video Insert	Original sound Newly inserted picture and Beta hi-fi sound	Original sound Newly inserted picture and Beta hi-fi sound
Audio/video Insert	Newly inserted monaural sound Newly inserted picture and Beta hi-fi sound	Newly inserted monaural sound Newly inserted picture and Beta hi-fi sound

Notes on the recording at the editing points

- At the starting and ending points, recording on the conventional audio track will be muted for a few seconds.
- A noise may be heard at the starting and ending points of the editing made when an edited tape is being played back.

Tracking adjustment

Play back the tape on which insertion will be made and adjust the tracking at the portions on the tape near the starting and ending points of insertion precisely on the recording VCR.

For pre-roll operation, control signals should have been recorded for at least 15 seconds before the insertion starting points on both tapes. If required, record the control signal before insert operation.

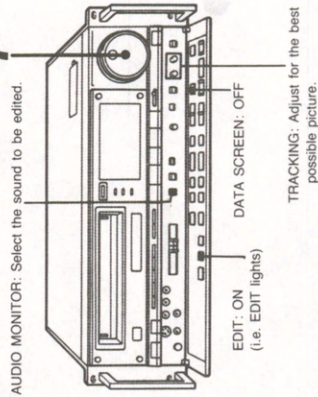
Notes

- Automatic insert editing cannot be made from an insert source tape recorded in **161** mode.
- When the video insert is made onto a Beta hi-fi recorded tape, the previously recorded Beta hi-fi sound will be erased.

Operation

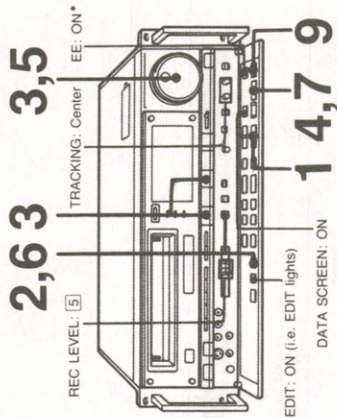
For automatic insert editing, assign the editing points on the recording VCR.

Playback VCR



The item to be set will blink in the display window and on the data screen.

Recording VCR



When a monitor TV is not connected to the playback VCR, press EE to view the picture from the playback VCR.

1

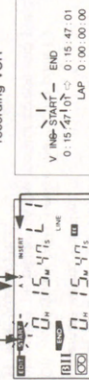
Press INSERT when the VCR is in stop mode. For "audio insert", press AUDIO. For "video insert", press VIDEO. For "audio and video insert", press both AUDIO and VIDEO INSERT.



Appears when AUDIO is pressed.

Appears when VIDEO is pressed.

Data screen on the monitor for the recording VCR



Indicates insert editing.

3

On the recording VCR, locate the point on the tape where you want to start the insertion, and set the VCR to playback pause mode. For accurate searching, use JOG/SHUTTLE.



Starting point

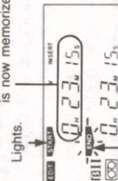
Starting point

4

Press MARK.



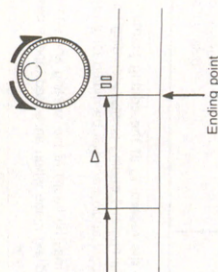
The starting point is now memorized.



Blinks.

To listen to the sound while editing, set AUDIO MONITOR to NORM. The sound recorded on the conventional audio track will be heard while JOG/SHUTTLE is being turned.

5 Locate the point on the tape where you want to stop the insertion, and set the recording VCR to playback pause mode.

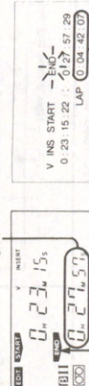


6 Select the sound to be edited with AUDIO MONITOR and STEREO L/R.

7 Press MARK.



The ending point is now memorized.



Lights.

Shows the duration of the insertion to be made.

8 On the playback VCR, locate the starting point to be inserted, and set the VCR to playback pause mode.

9 Press START on the recording VCR. Insertion will start.



At the preset ending point, the insertion will stop automatically. Both VCRs will be set to playback pause mode.

To release the insert mode

To release video insert mode, press VIDEO INSERT again. To release audio insert mode, press AUDIO INSERT again. To release audio/video insert mode, first press VIDEO, and then AUDIO.

To stop the on-going insertion, press ■ STOP on the recording VCR.

Notes

- When insertion is made onto an unrecorded portion of a tape, the slow motion playback picture may be noisy at the ending point of the insertion. When an edited tape is played back in slow motion or stop-action advance playback mode, the picture may be noisy at the ending point of the editing.
- If there is an unrecorded portion between the starting and ending points, insertion will stop earlier than the preset ending point by the amount of the unrecorded portion.

If there is a [BI] recording on the tape

- Insert editing will stop automatically when a [BI]-recorded portion is played back.
- The insert mode will be released automatically when a [BI]-recorded portion is detected while locating the starting or ending point of automatic insert editing.

1-30. SIMPLE EDITING

You can simply start and stop editing without marking the editing points. Use two EDV-9500, or one EDV-9500 and SL-HF1000, and connect the CONTROL T jacks. For the connection, see page 36.

Simple Assemble Editing

- Press ASSEMBLE on the playback VCR.
- Locate the starting point of the scene on the playback VCR and set the VCR to playback pause mode.
- Locate the point at which editing is to start on the editing VCR and set the VCR to playback pause mode.
- Press START on the playback VCR. Assemble editing will start.
- On the playback VCR, decide the ending point by observing the picture on the monitor screen and press II/PAUSE/STILL.

The playback VCR will be set to playback pause mode in 2 seconds.
The editing VCR rewinds the tape to the ending point and then is set to playback pause mode.

To edit another scene, press ASSEMBLE to release assemble editing mode and press it again.

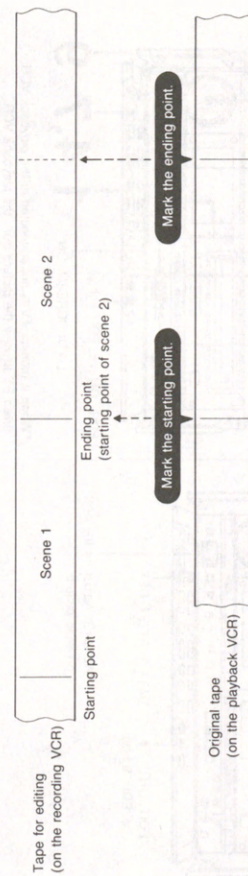
Continuous Editing (Butt Edit)

When editing of one scene is finished, the tape on the editing VCR is set at the ending point of the previous editing. Therefore, you should only mark the starting point (and the editing point) of the next scene to be edited on the playback VCR and press START. This method of editing is called "Butt Edit".

Simple Insert Editing

- Press VIDEO and/or AUDIO INSERT button on the editing VCR.
- Locate the point at which editing is to start on the editing VCR and set the VCR to playback pause mode.
- Locate the starting point of the scene to be inserted on the playback VCR and set the VCR to playback pause mode.
- Press START on the editing VCR. Insert editing will start.
- On the editing VCR, decide the ending point by observing the picture on the monitor screen and press II/PAUSE/STILL.

The editing VCR plays the tape back for 2 seconds, rewinds the tape to the ending point, and is set to playback pause mode.
The playback VCR will be set to playback pause mode in 2 seconds.

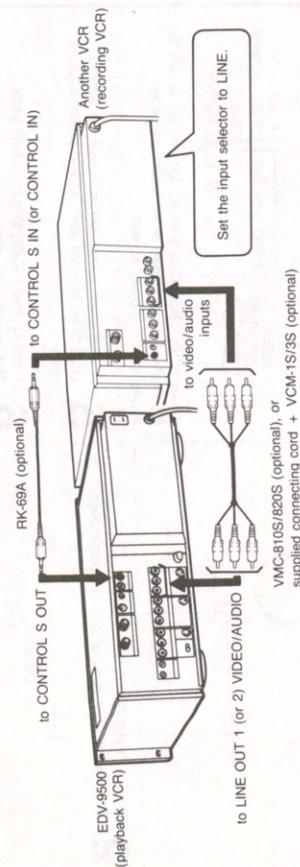


1-31. EDITING WITH A SONY VCR EQUIPPED WITH A CONTROL TERMINAL

If you have another Sony VCR equipped with intercomponent control terminals, such as a control S jack or CAMERA REMOTE jack, connect the control terminals of the other VCR and this VCR in addition to the video and audio connections. With this connection, automatic assembly editing (page 37) and manual insert editing (page 41) can be made. However, pre-roll will not be carried out while editing. The editing procedures are the same as those described on page 37 and page 42.

Note
When the VCRs are connected through the CONTROL S or CAMERA REMOTE terminals, some errors may result between two continuous editings.

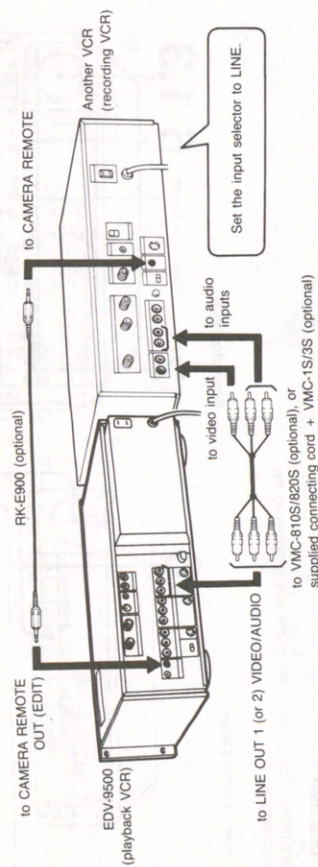
Connecting a VCR Equipped with a Control S IN Jack



Notes

- When the VCRs are connected as above, the remote sensor of the other VCR may not function. This is not a failure.
- When the Sony SL-HF900 is connected as above, the power switch of the SL-HF900 may not function. In this case, turn the power on and off using the power switch on the Remote Commander.
- If the other VCR has S VIDEO connectors, connect the LINE OUT S VIDEO connector of this VCR to the S VIDEO IN connector of the other VCR, in place of the connections between the phono-type VIDEO IN and OUT jacks.

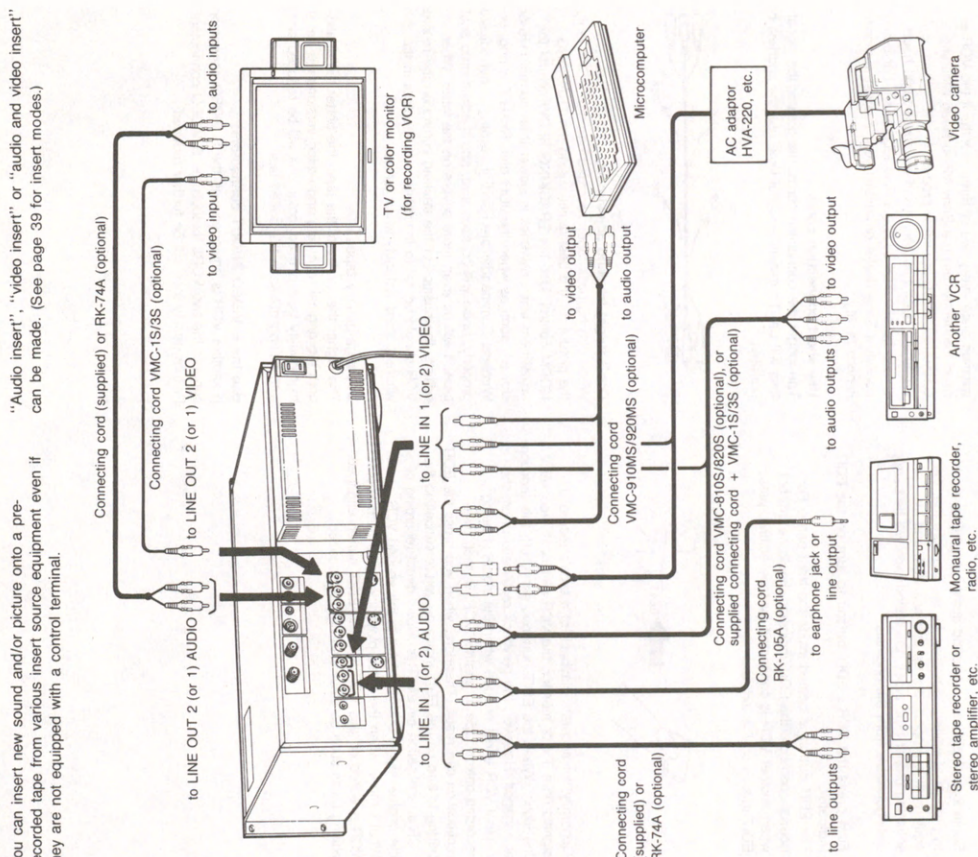
Connecting a VCR Equipped with a CAMERA REMOTE jack



1-32. MANUAL INSERT EDITING

Connection

You can insert new sound and/or picture onto a pre-recorded tape from various insert source equipment even if they are not equipped with a control terminal.



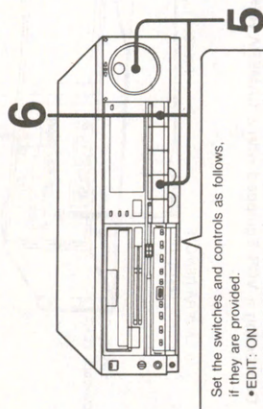
To insert the sound from a microphone
Connect a microphone to the MIC jack on the front and set INPUT SELECT to any position. When a microphone is connected to the MIC jack, the sound from it will always be recorded on the conventional audio track.

1-33. TAPE EDITING TECHNIQUES

Operation

For manual insert editing, assign the editing points on the recording VCR.

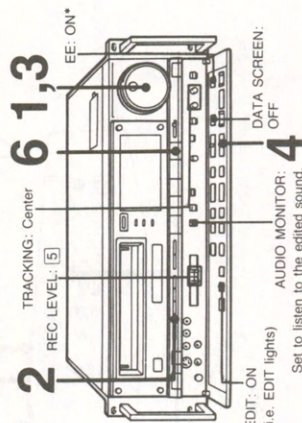
Insert source player



Set the switches and controls as follows, if they are provided.

- EDIT: ON
- AUDIO MONITOR: Select the sound to be edited.
- TRACKING: Adjust for the best possible picture
- DATA SCREEN: OFF

Recording VCR



*When a monitor TV is not connected to the playback VCR, press EE to view the picture from the insert source player.

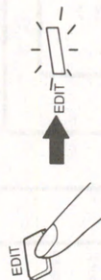
Tape editing is a simple process that can add much enjoyment to viewing of recorded tapes. Through editing, you can transfer just the sections of previously recorded tapes you want to keep to another tape, add scenes, change the order of playback, and otherwise create a final video tape with just the contents you want. While the arrangement of VCRs and connections for editing is previously shown, this section contains hints and tips for editing that can make it more interesting and enjoyable—not to mention more successful.

Minimizing Loss of Picture and Sound Quality

Some loss of picture and sound quality is an unavoidable by-product of editing. However, by making sure that the equipment is properly set up and adjusted, and by selecting proper tape types, the edited tape will be barely distinguishable from the originals.

First press the VCR's EDIT button to turn on the EDIT indicator.

The EDIT button is located inside the front panel. For normal operation, the EDIT indicator should be off, but when another VCR is connected for tape editing, press EDIT to turn on the indicator.



Generally, for accurate playback of a tape's recorded signals on a TV or monitor, the VCR electrically rectifies the signal. When the EDIT button is set to off, this function is engaged. However, the playback rectification from the original VCR is not needed when the signal is being recorded onto a tape in another VCR, in fact, over-rectification can result. Therefore, when you press the EDIT button to turn on the EDIT indicator, you're cancelling the VCR's rectification circuit. This allows direct recording of the original signal onto the tape in the second VCR.

What's more, when the video playback signal from another VCR is edited on this VCR with the EDIT button engaged, editing faults such as color shift can be reduced.

Note
Manual insert editing can be carried out without assigning the ending point. In this case, press COUNTER RESET before starting insertion in step 7. Otherwise, insertion will stop automatically when the counter reaches zero.

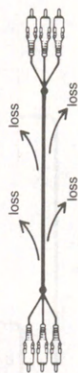
If the input and output terminals or the recording head become dirty, the signal is reduced significantly. Terminals are the entrance and exit points for signals. If these terminals become dirty, it is impossible to achieve high-quality pictures or sound. Therefore, the terminals should be checked occasionally for dirt or corrosion. If any is present, wipe the terminal with a dry cloth or cloth slightly dipped in alcohol until it is clean.

Also, if the video head becomes soiled with dust or magnetic particles, the S/N (signal-to-noise) ratio will drop and picture and sound quality will be reduced. Since the head can be dirty even if it looks clean, it should be cleaned once every two or three months if the VCR is used frequently, using a Sony Video Head Cleaning Cassette L-25CL or similar product.

When the head has been used for about 1,000 hours, it should be checked by a qualified technician. For details, consult a Sony dealer or contact your nearest authorized service facility.

Use short connection cords

The longer the connection cords, the greater the signal loss will be. To minimize signal loss, use the shortest cords possible.



Don't forget tracking adjustment.

When playing back tapes recorded on other VCRs, adjust the picture for the best quality using the TRACKING NORM control. Use the TRACKING SLOW control for adjustment when playback is slower than normal (1/5 or slower), such as when the JOG dial, SHUTTLE ring, or Wireless Commander are used. If tracking is not adjusted properly, noise will be excessive, and if edited onto another tape, it will be even more severe on the latter. When editing, the position of the tracking control on the recording VCR should be set to the mark or to the spot in the middle where it stops naturally when turned.

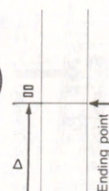
Use high-quality tapes.

The higher the quality of the tape, the better the quality of both the original recording and edited versions will be. If high-quality tape is used, color loss will be reduced along with editing marks in the edited tape.

Use the S VIDEO IN/OUT connectors.

If another VCR is equipped with the S VIDEO connectors, connect the two VCRs through the S VIDEO connectors. Picture quality loss will be further reduced.

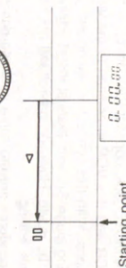
1 Locate the point where you want to stop the insertion, and set the unit to playback pause mode. For accurate searching, use JOG/SHUTTLE.



2 Press COUNTER RESET.
The ending point is registered as counter zero.



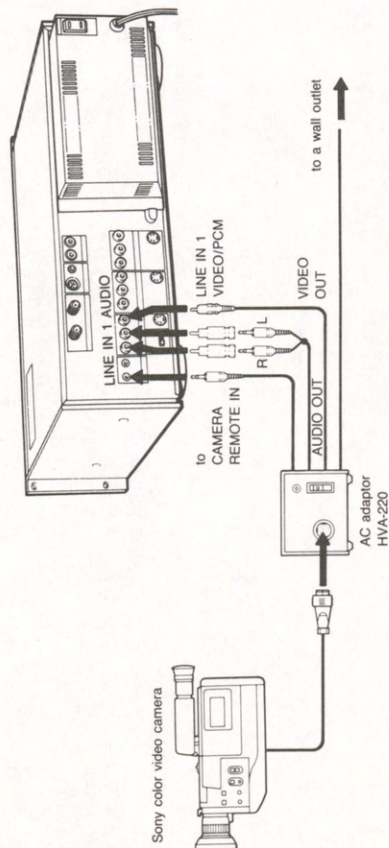
3 Locate the point where you want to start the insertion, and set the unit to playback pause mode.



1-34. CAMERA RECORDING

Connections

- The camera must conform to American TV (EIA) standards.



- The use of a Sony HVA-220 AC adaptor is required.

Operation

- 1 Set INPUT SELECT to LINE 1.
- 2 Turn on the AC adaptor and prepare the video camera for recording.
- 3 While pressing **II** (PAUSE/STILL), slide **●** REC to the right on the VCR.
- 4 Press the tape run/stop button on the camera. Camera recording will begin.

To stop the recording momentarily, press the tape run/stop button on the camera.
To stop the recording completely, press **■** STOP on the VCR or the Commander.

Frame-by-frame Shooting

To tape an animated program of your own, follow the steps below.

- 1 Shoot an object, a doll for example, with your camera for approximately 15 seconds, then set the VCR in the recording pause mode with **II** (PAUSE/STILL).
- 2 Move the object a little and slide **●** REC of the VCR to the right or press **●** REC of the Remote Commander. A very short recording of approximately seven frames will be made and then the VCR will automatically go into the pause mode again.

Repeat Step 2 as many times as you like.

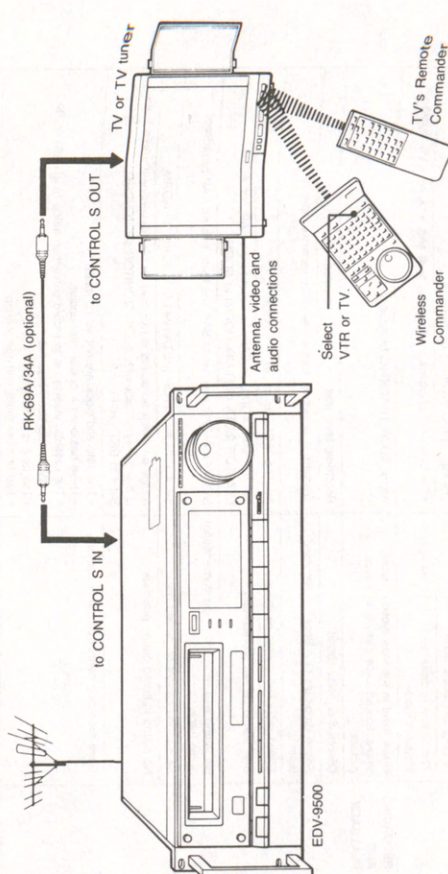
When such recordings are played back continuously, the object will seem as if it is moving.

1-35. USING THE SONY CONTROL SYSTEM

Besides the automatic insert and assemble editing operations, Sony control system allows other intercomponent controls of Sony equipment possible.

Operating by Remote Control through a TV Set or Component TV Tuner

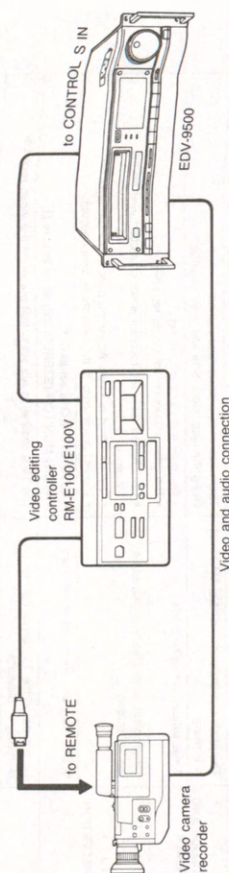
If your Sony TV set or component TV tuner is equipped with a CONTROL S OUT jack, you can operate this VCR by remote control through the TV or TV tuner. This is especially handy for operating the VCR by remote control while watching TV when the two are located apart from each other.



Editing the Recording on 8 mm Format Tapes onto **II** Tapes with the Video Editing Controller

If you own an 8 mm video camera recorder equipped with a 5-pin REMOTE connector, you can connect the RM-E100/E100V video editing controller between the video camera recorder and this VCR for easier and much faster tape editing of 8 mm tapes onto **II** Format tapes.

With this controller, you will be able to preset the locations of the scenes you want to record (up to 8) in the controller and with a press of a button, these scenes will be recorded by this VCR automatically in the order preset.
For details, refer to the instruction manual of the RM-E100/E100V.

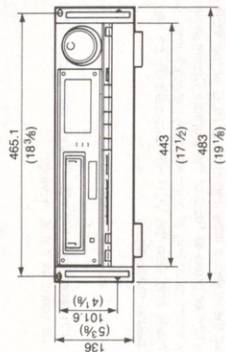


Notes

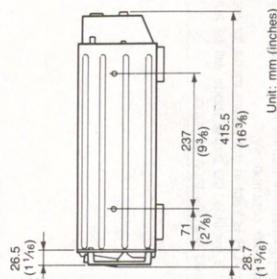
- This function can also be used when recording from the TV.
- The picture may be a little distorted and a noise may be heard when the frame-by-frame recordings are played back continuously.
- If the VCR is kept in the pause mode for more than about 8 minutes, the pause mode will be automatically released and the tape will stop.

1-36. RACK MOUNTING

The EDV-9500 is designed to be mounted in a 19-inch standard rack. It's also possible to mount the EDV-9500 in other racks which can answer a variety of needs.



Remove the handles before mounting in the rack. Please contact your authorized Sony dealer when you want to mount the EDV-9500 in the rack.



Unit: mm (inches)

1-37. TROUBLE CHECKS

If any difficulty should arise during operation, first check the power cord connection, then go through the following list. Should the difficulty persist, unplug the unit and contact your Sony dealer or local authorized Sony service facility.

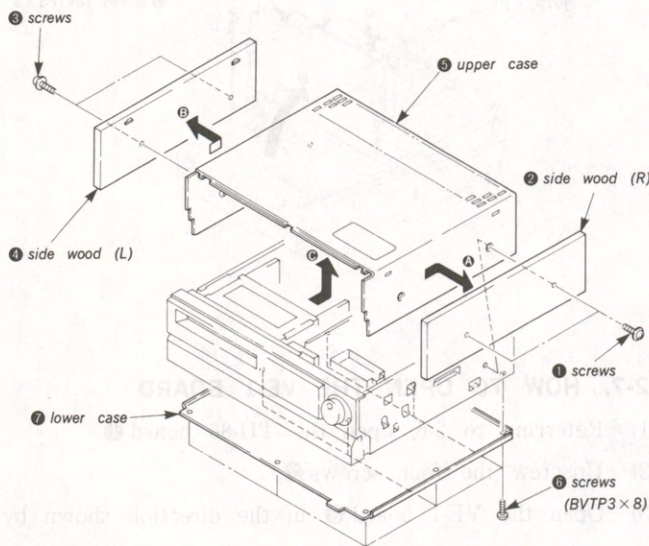
	Symptom	Possible causes
POWER	The POWER switch does not function.	The recorder is in the timer standby mode. Press TIMER REC.
	The power is turned on, but the unit does not operate.	The safety device on the unit has activated. Turn the power off, disconnect the power cord from the wall outlet and leave the unit for more than one minute.
CLOCK AND TIMER	The clock has stopped and "Su AM 12:00" is blinking.	There has been a power interruption. Reset the date, clock time and timer settings.
	Timer setting cannot be made.	• The date and clock are not set. • The timer cannot be set during recording.
TV RECEPTION	TV program is not clearly displayed on the TV screen.	• The channel for video recorder is not correctly tuned on the TV receiver. • The TV signal is weak. Adjust the direction of the antenna. • The AC power cord of the recorder is disconnected.
	Stereo programs are heard in monaural.	• AUTO STEREO is set to OFF. • AUDIO MONITOR (STEREO/L/R) is set to L or R.
	No picture on the TV screen during recording or playback	The TV's channel is not set to that preset for the video recorder.
	Picture being recorded cannot be monitored on the TV screen.	Press TV/VTR so that the VTR indicator appears in the window.
RECORDING AND PLAYBACK	Noisy picture	The video heads may be contaminated. Clean the heads using the Sony L25CL video head cleaning cassette. For details on cleaning, refer to the instructions furnished with the cleaning cassette. If the L25CL cleaning cassette is not available in your area, have the heads cleaned at the nearest Sony service facility.
	The playback picture is not clear.	• Check the SUPER BETA button setting. • MPX FILTER is set to PCM. • Adjust TRACKING NORM or SLOW . • Adjust SHARPNESS .
	The picture moves vertically in Betascan or Beta SkipScan mode.	Adjust the vertical hold control on the TV or color monitor.
	The picture is distorted in 1/2 or 1/10 speed playback mode.	The tape speed could not be detected.
	Noise band in the slow motion picture, stop-action advance picture, or freeze picture.	• Set to normal playback mode, press ▶ and $\times \frac{1}{2}$ or $\times \frac{1}{10}$ again. Adjust SLOW TRACKING to move it.
	Distorted or noisy sound	Recording level was not properly adjusted.
	Sound drop-outs of a Beta hi-fi recorded tape	The tape is defective. Use a new video cassette tape.
	Stereo recording cannot be made.	AUTO STEREO is set to OFF (MONO).
	SAP sound cannot be recorded.	Set NORMAL AUDIO to SAP . To listen to the SAP , set AUDIO MONITOR (BETA HI-FI/MIX/NORM) to NORM .
	No sound was recorded in the conventional audio track.	NORMAL AUDIO was set to SAP and there was no SAP broadcast.
OTHERS	SAP sound cannot be played back.	Set AUDIO MONITOR (BETA HI-FI/MIX/NORM) to NORM .
	No sound is heard during playback.	A tape on which no sound is recorded on the conventional audio track is being played back with AUDIO MONITOR set to NORM . Set it to BETA HI-FI .
	Timer recording cannot be made correctly.	• The date and clock are not set correctly. • There has been a power interruption. • The cassette inserted is in record prevention mode (page 26) or no cassette has been inserted. • The tape is at its end. • Two or more timer settings overlap.
	The recorder cannot be remotely controlled.	• The remote control TV/VTR selector on the Commander is set to TV . • The command mode selector on the Remote Commander is not set at the same position as that on the VCR. • The batteries are exhausted.
	The tape counter does not operate even if the tape moves.	• When using JOG/SHUTTLE , press JOG SHUTTLE function button or CHANNEL/TIMER function button. • The COMMAND MODE switch on the VCR is set to OFF.
	Cassette cannot be inserted.	• The tape is brand-new. • It will not operate with the unrecorded portion of a tape.
	The cassette cannot be ejected.	The cassette being inserted is reversed.
	Data screen display does not appear.	Recording is being done. • MPX FILTER is set to PCM . Set to ON or OFF . • DATA SCREEN is set to OFF mode. Press it again.

SECTION 2 DISASSEMBLY

2-1. HOW TO TAKE OFF THE CASES (UPPER/LOWER)

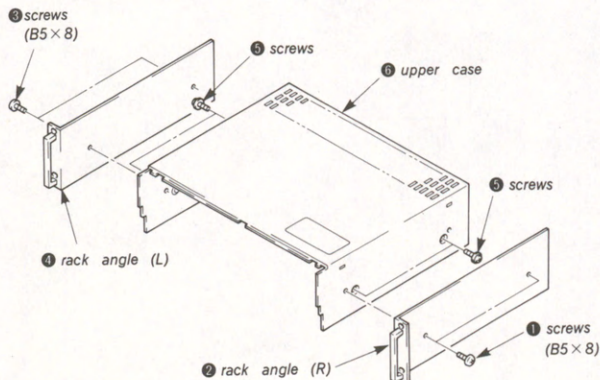
[EDV-9300]

- 1) Unscrew the two screws ① to detach the side wood (R) ② in the direction shown by the arrow A.
- 2) Unscrew the two screws ③ to detach the side wood (L) ④ in the direction shown by the arrow B.
- 3) Take off the upper case ⑤ in the direction shown by the arrow C.
- 4) Unscrew the nine screws ⑥ to take the lower case ⑦ off.



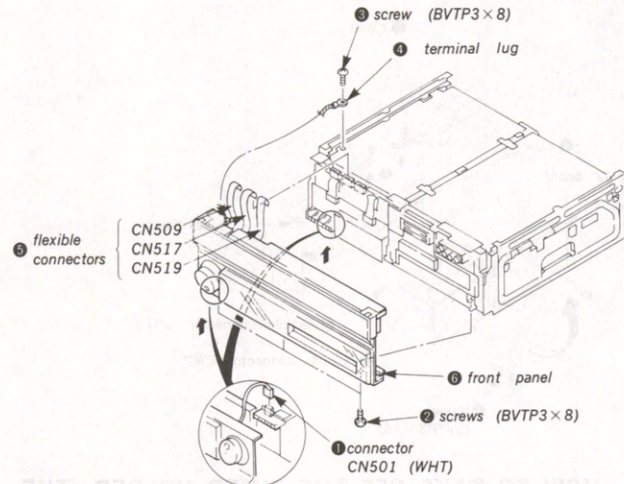
[EDV-9500]

- 1) Unscrew the two screws ① to detach the rack angle (R) ②.
- 2) Unscrew the two screws ③ to detach the rack angle (L) ④.
- 3) Unscrew the four screws ⑤ to take off the upper case ⑥.
- 4) Similarly to EDV-9300, take the lower case off.



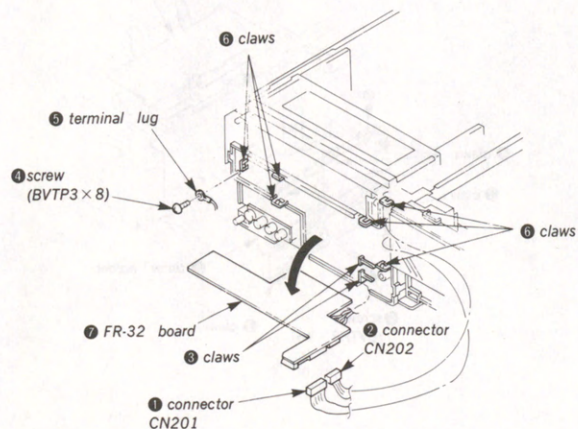
2-2. HOW TO TAKE OFF THE FRONT PANEL

- 1) Take off the connector CN501 ①.
- 2) Unscrew the three screws ②.
- 3) Turn the set back.
- 4) Unscrew the screw ③ to take off the terminal lug ④.
- 5) Take off the three flexible connectors ⑤ (CN509, CN517 and CN519).
- 6) Take off the front panel ⑥.



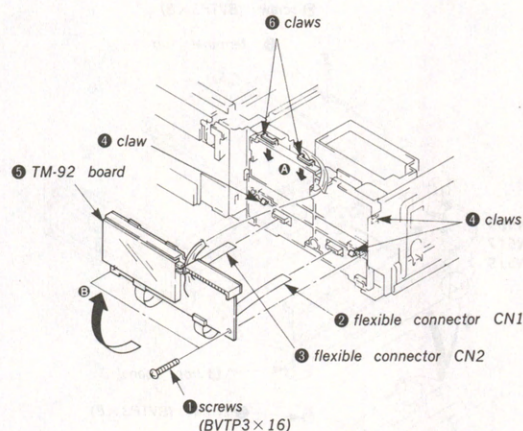
2-3. HOW TO OPEN THE FR-32 BOARD

- 1) Take off the connector CN201 ①.
- 2) Take off the connector CN202 ②.
- 3) Detach the harness from two claws ③.
- 4) Unscrew the screw ④ to take the terminal lug ⑤ off.
- 5) Take off the six claws ⑥ to open the FR-32 board ⑦ in the direction shown by the arrow.



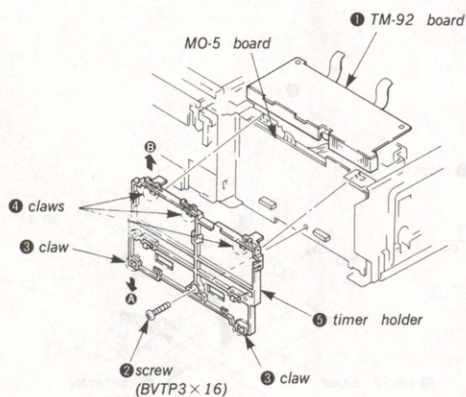
2-4. HOW TO OPEN THE TM-92 BOARD

- 1) Unscrew the two screws ①.
- 2) Take off the flexible connectors CN1 ② and CN2 ③.
- 3) Take the TM-92 board ⑤ off the three claws ④.
- 4) Detach the board from the two claws ⑥ in the direction shown by the arrow A.
- 5) Open the board in the direction shown by the arrow B.



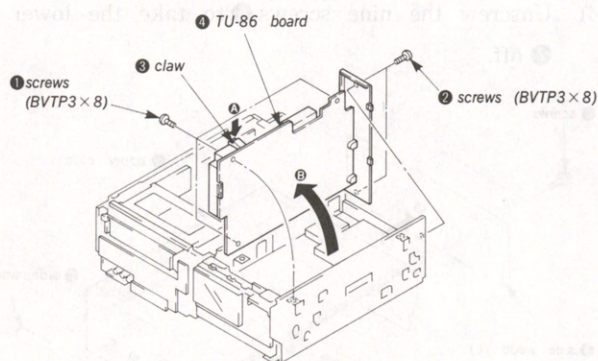
2-5. HOW TO TAKE OFF THE TIMER HOLDER (THE MO-5 BOARD)

- 1) Referring to 2-4, open the TM-92 board ①.
- 2) Unscrew the screw ②.
- 3) Detach the timer holder ⑤ from the two claws ③ in the direction shown by the arrow A.
- 4) Detach the holder from the three claws ④ in the direction shown by the arrow B to take it off the set.



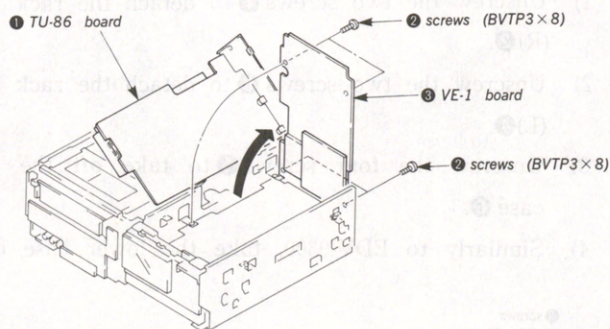
2-6. HOW TO OPEN THE TU-86 BOARD

- 1) Unscrew the three screws ①.
- 2) Unscrew the two screws ②.
- 3) Push the claw ③ in the direction shown by the arrow A to get it off.
- 4) Open the TU-86 board ④ in the direction shown by the arrow B.



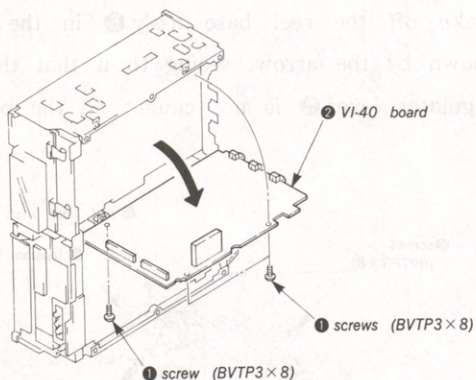
2-7. HOW TO OPEN THE VE-1 BOARD

- 1) Referring to 2-6, open the TU-86 board ①.
- 2) Unscrew the four screws ②.
- 3) Open the VE-1 board ③ in the direction shown by the arrow.



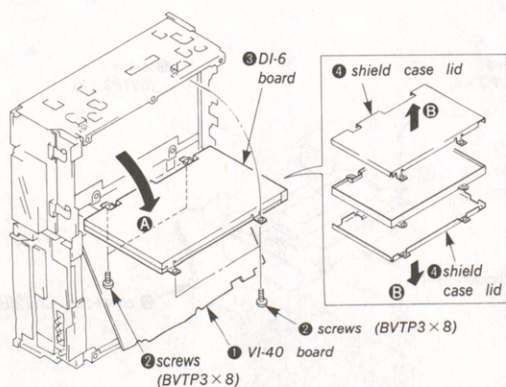
2-8. HOW TO OPEN THE VI-40 BOARD.

- 1) Unscrew the three screws ①.
- 2) Open the VI-40 board ② in the direction shown by the arrow.



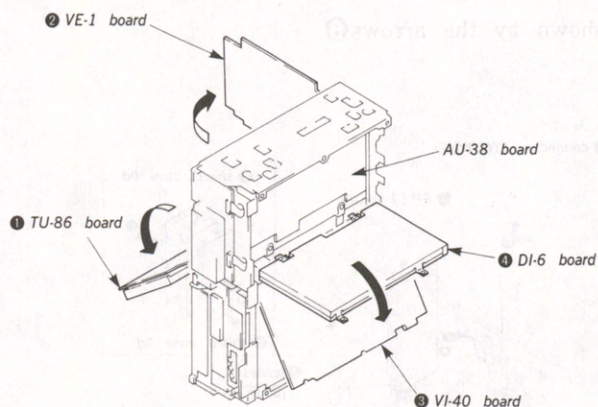
2-9. HOW TO OPEN THE DI-6 BOARD

- 1) Referring to 2-8, open the VI-40 board ①.
- 2) Unscrew the four screws ②.
- 3) Open the DI-6 board ③ in the direction shown by the arrow A.
- 4) Take off the shield case lids ④ in the directions shown by the arrows B.



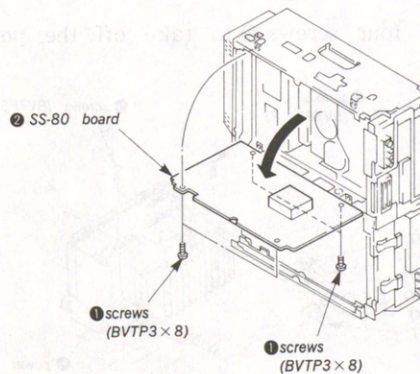
2-10. HOW TO OPEN THE AU-38 BOARD

- 1) Referring to 2-6, open the TU-86 board ①.
- 2) Referring to 2-7, open the VE-1 board ②.
- 3) Referring to 2-8, open the VI-40 board ③.
- 4) Referring to 2-9, open the DI-6 board ④.



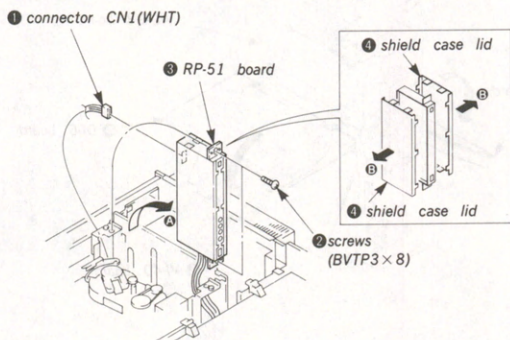
2-11. HOW TO OPEN THE SS-80 BOARD

- 1) Unscrew the four screws ①.
- 2) Open the SS-80 board ② in the direction shown by the arrow.



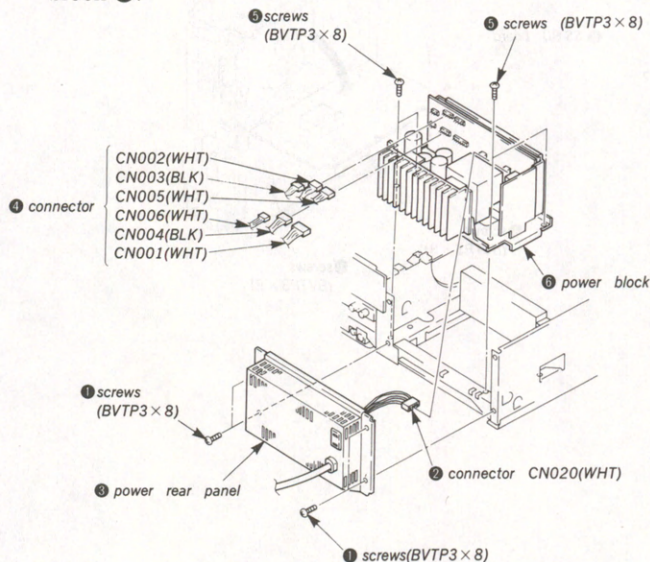
2-12. HOW TO OPEN THE RP-51 BOARD

- 1) Referring to 2-11, open the SS-80 board.
- 2) Get the connector CN1 off.
- 3) Unscrew the two screws.
- 4) Open the RP-51 board in the direction shown by the arrow A.
- 5) Take off the two shield case lids in the directions shown by the arrows B.



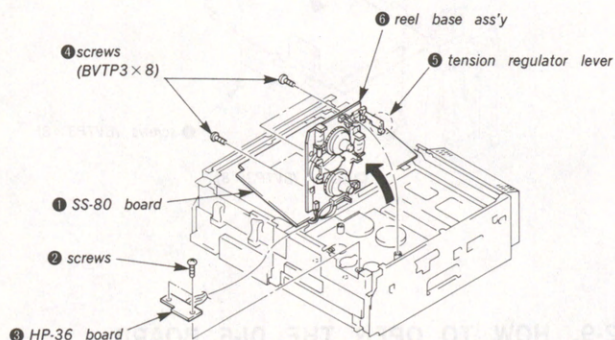
2-13. HOW TO TAKE OFF THE POWER BLOCK

- 1) Unscrew the four screws.
- 2) Take off the connector CN020 to detach the power rear panel.
- 3) Take off the six connectors (CN001, CN002, CN003, CN004, CN005, CN006).
- 4) Unscrew the four screws to take off the power block.



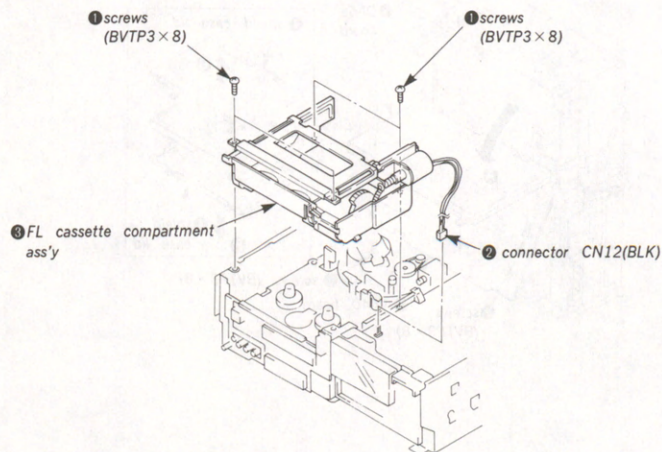
2-14. HOW TO TAKE OFF THE REEL BASE ASS'Y

- 1) Referring to 2-11, open the SS-80 board.
- 2) Unscrew the two screws to take off the HP-36 board.
- 3) Unscrew the four screws.
- 4) Take off the reel base ass'y in the direction shown by the arrow, seeing to it that the tension regulator lever is not caught on the body.



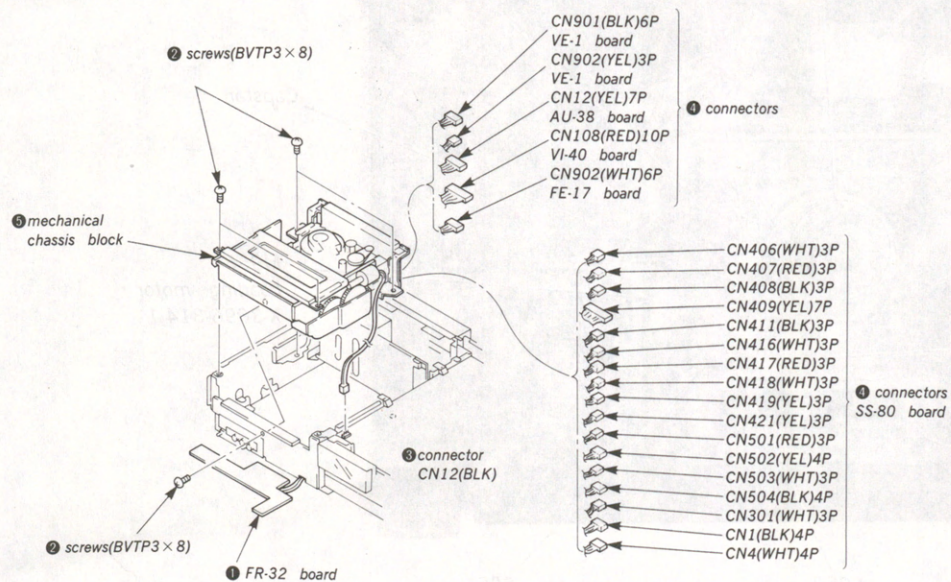
2-15. HOW TO TAKE OFF THE FL CASSETTE COMPARTMENT ASS'Y

- 1) Unscrew the four screws.
- 2) Get off the connector CN12 to take off the FL cassette compartment ass'y.



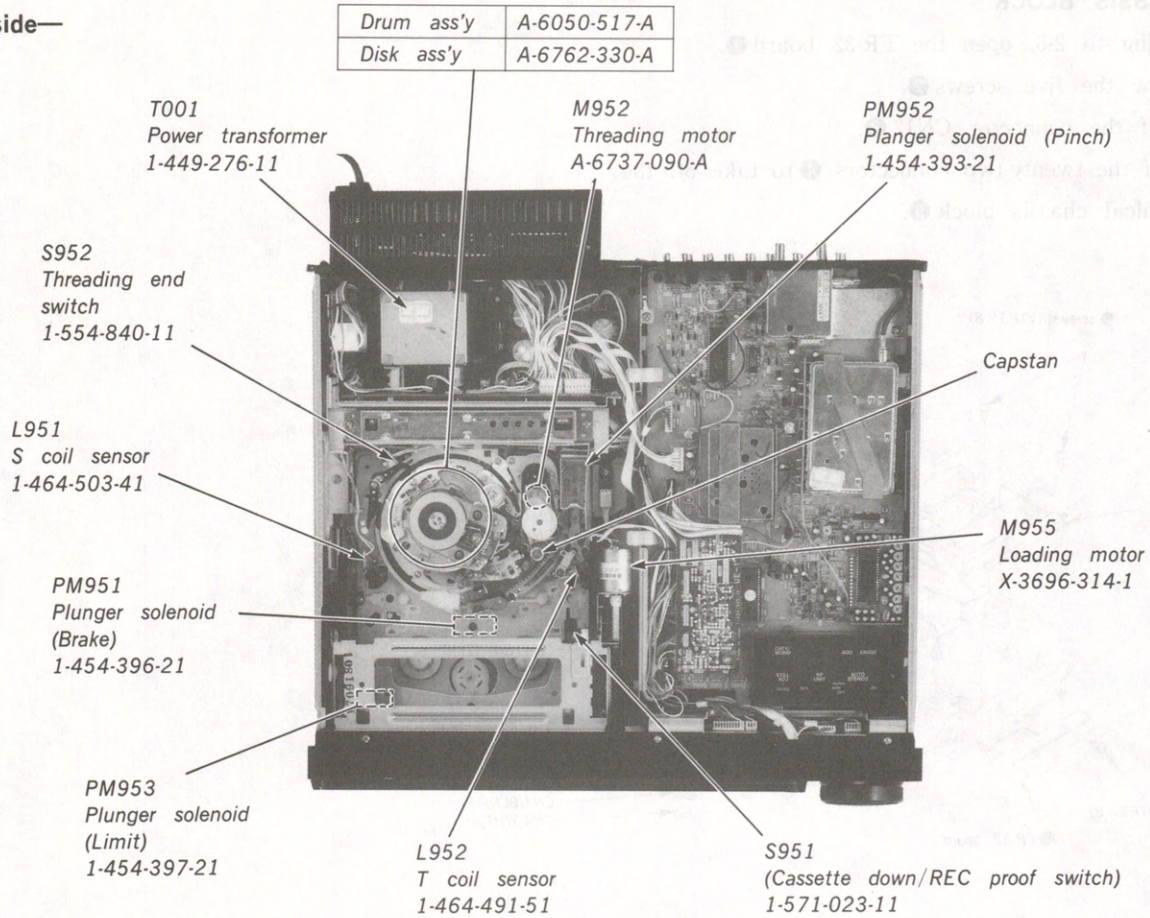
2-16. HOW TO TAKE OFF THE MECHANICAL CHASSIS BLOCK

- 1) Referring to 2-3, open the FR-32 board ①.
- 2) Unscrew the five screws ②.
- 3) Get off the connector CN12 ③.
- 4) Get off the twenty-two connectors ④ to take off the mechanical chassis block ⑤.

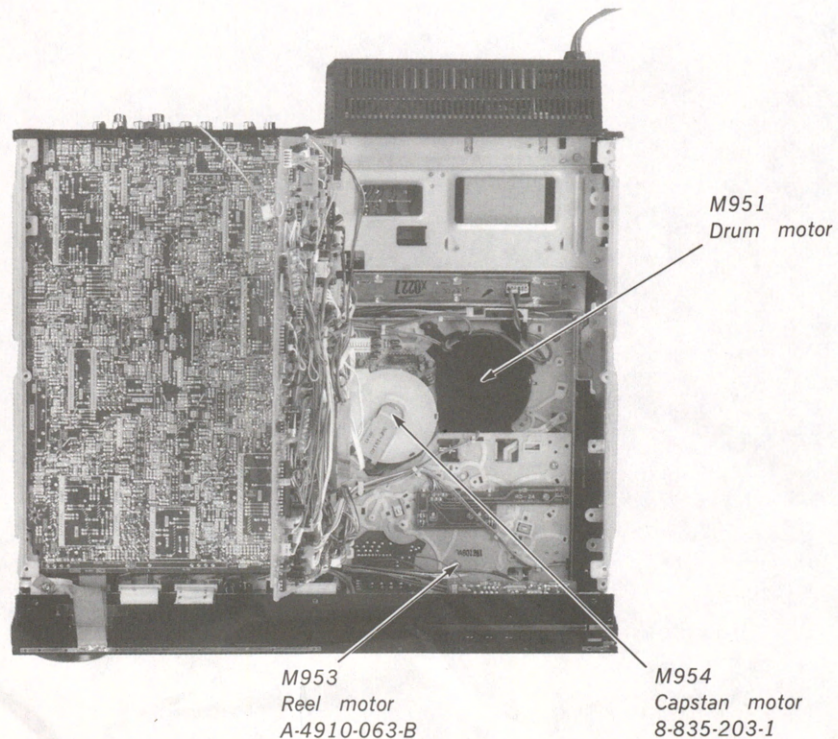


2-17. INTERNAL VIEWS

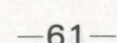
—Top side—



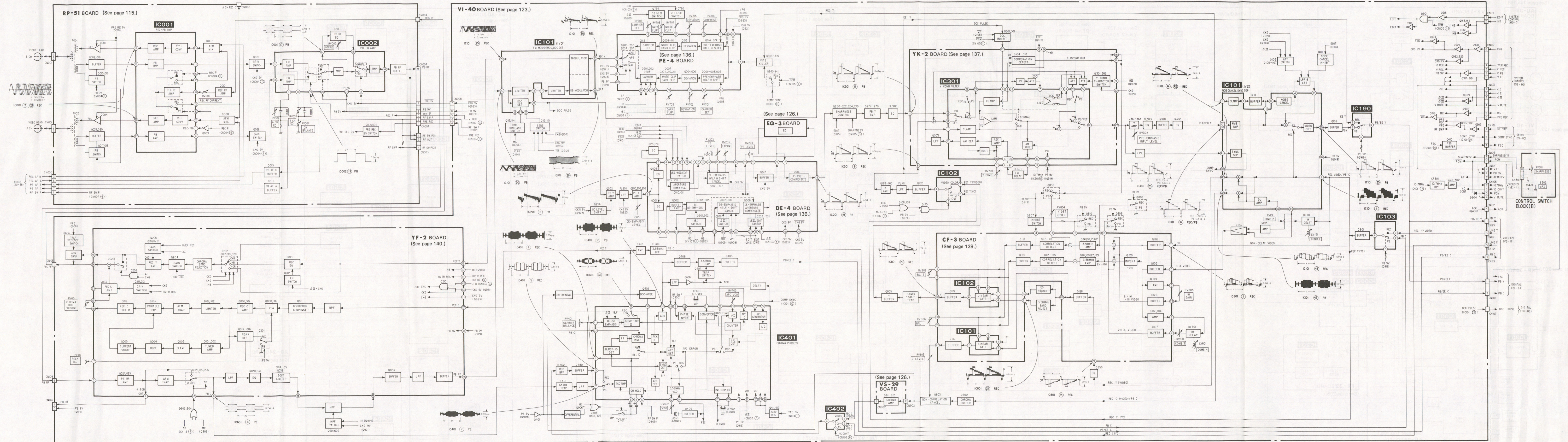
Bottom side—



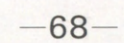
OVERALL BLOCK DIAGRAM



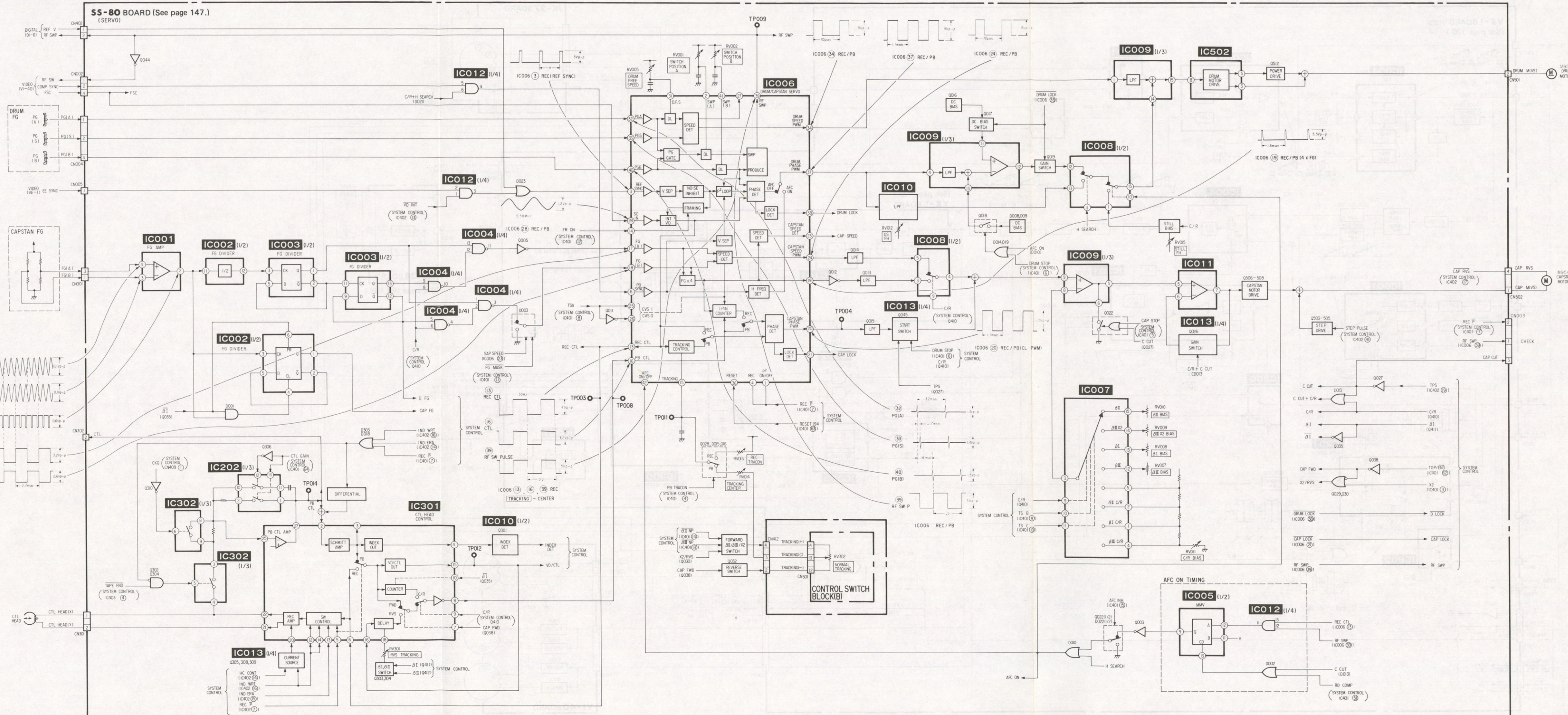
3-2. VIDEO(1) BLOCK DIAGRAM



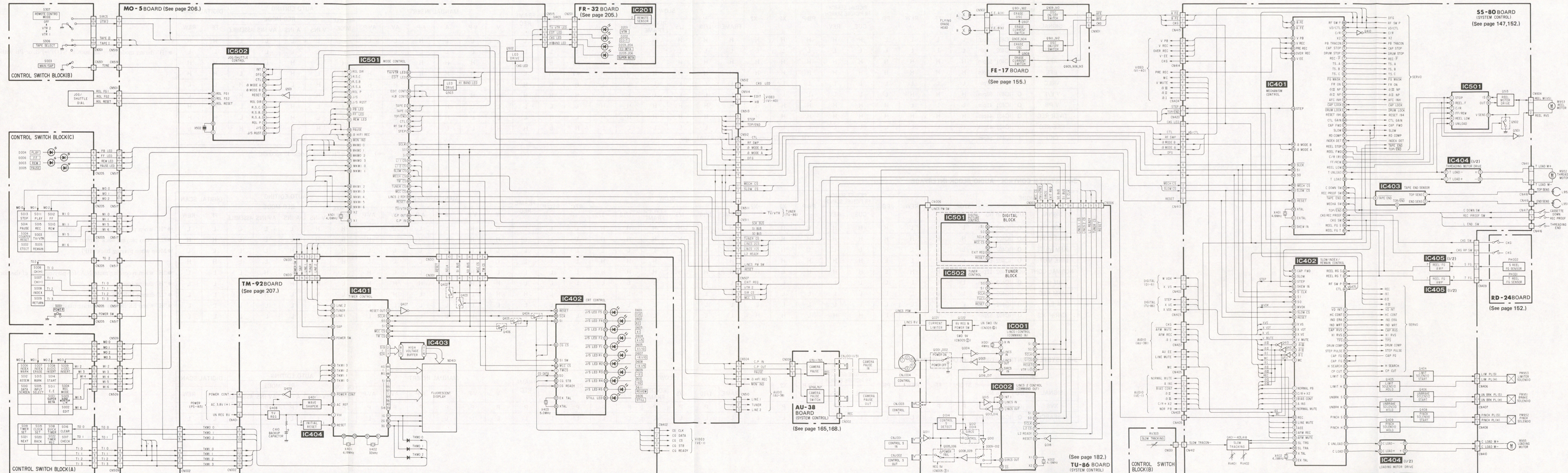
— 67 —



3-4. SERVO BLOCK DIAGRAM



3-5. SYSTEM CONTROL BLOCK DIAGRAM



3-6. SYSTEM CONTROL—VIDEO BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	-X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING				DIGITAL SCAN		
SIGNAL	I/O	Pin No.					CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	-1/10	-1/5				V	V-P	A	A-P	AV	AV-P	PRE ROLL MODE	REC MODE				FF	REW
																												V INS	A INS	AV INS	ASSEMBLE		
MC	O	IC402 3pin	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H
V MUTE	O	IC402 4pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
AFE	O	IC401 53pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	*1	H	L	L	H	H	H	L	H	H	L	H	L	L	H	H
BFE	O	IC401 52pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	*1	H	L	L	H	H	H	L	H	H	L	H	L	L	H	H
VREC	O	IC401 42pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L	L	H	H	L	H	L	H	H	L	L
V E/E	O	IC401 50pin	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L	L	H	L	H	L	H	H	L	L	
V PB	O	IC401 41pin	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	H	H	L	L	H	L	L	H	H	
OVER REC	O	IC401 44pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	L	L	L	H	H	L	H	L	L	L	L	H	H	
PRE REC	O	IC401 43pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	H	H	L	L	H	L	L	H	L	H	H	L	L	
CKG	I	IC401 54pin	"H" when ED tape, "L" when NORMAL tape.																														

*1. Becomes "H" after approx. 15 seconds.

● "H" during mode traveling such as STOP→PB, or PB without CTL.

3-7. SYSTEM CONTROL—AUDIO BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	-X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						PRE ROLL MODE	AUTO EDITING				DIGITAL SCAN					
SIGNAL	I/O	Pin No.					CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	-1/10	-1/5				V	V-P	A	A-P	AV	AV-P		REC MODE				V INS	A INS	AV INS	ASSEMBLE	FF	REW
NOR PB	O	IC402 1pin	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	H	H	L	L	L	L	H	H	L	L	L	L	L	L	L		
BIAS CONT	O	IC402 8pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	H	H	L	H	L	H	H	H	L	L	L	L	H	H	H		
AFM MUTE	O	IC402 10pin	L	L	L	H	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	H	L	H	L	L	L	L	L	L		
LINE MUTE	O	IC402 64pin	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	H	H	H		
NORMAL CONT	O	IC402 12pin	H	H	H	L	H	H	H	L	H	H	H	H	H	H	H	L	L	L	L	H	L	L	L	H	L	H	H	H	L	L	L	L	L		
AU INS	O	IC402 11pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	H	H	H	L	L	L	L	L		
AFM REC	O	IC402 9pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	H	L	L	L	H	L	L	H	L	H	H	L	L	L	L	L		
A E/E	O	IC402 2pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		
C/R+ ×2	O	IC402 52pin	L	L	L	L	H	H	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L	L	L	L	L	L	L	L	L		

- "H" when playing back normal audio.
- "L" when playing back normal audio.
- Mute when playing back HiFi
- "H" when recording mute N.A. for playing back of the normal audio.
- "H" during insert
- "L" during HiFi REC.
- "H" when EE Button on during playback.

3-8. SYSTEM CONTROL—DIGITAL BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	-X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING				DIGITAL SCAN		
SIGNAL	I/O	Pin No.					CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	-1/10	-1/5				V	V-P	A	A-P	AV	AV-P	PRE ROLL MODE	REC MODE				FF	REW
																												V INS	A INS	AV INS	ASSEMBLE		
XVS	O	IC402 45pin	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
H SEARCH	O	IC402 60pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	

3-9. SYSTEM CONTROL—SERVO BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	-X2	SLOW		SLOW					REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING					DIGITAL SCAN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
							CUE	REV						FRAME	1/10	1/5	REVERSE FRAME	-1/10				-1/5	V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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●“L” the moment ×2→PB, CUE→PB and REV→-×1.

●“PULSE” during drum rotation

*“H” when CTL is lost

3-10. SYSTEM CONTROL—REEL MOTOR BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	-X2	SLOW					REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING				DIGITAL SCAN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
							CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	-1/10				-1/5	V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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● “PULSE” during reel rotation

3-11. SYSTEM CONTROL—CAPSTAN MOTOR BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	-X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING					DIGITAL SCAN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
							CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	-1/10	-1/5				V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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●“L” when capstan servo lock

MODE	#MODE	TAPE SPEED A(8)	TAPE SPEED B(9)	TAPE SPEED C(10)
X1, INS -X1 REC	I	H	L	L
	II	L	H	L
	III	L	H	H
X2 -X2	I	H	L	L
	II	H	L	L
	III	L	L	H
CUE	I	H	H	H
	II	L	L	L
	III	L	L	H
REV	I	H	H	H
	II	L	H	L
	III	L	L	H
PAUSE FRAME BY FRAME SLOW	I	H	L	L
	II	L	H	L
	III	L	H	H
STOP, LOADING FF		×	×	×
		×	×	×

3-12. SYSTEM CONTROL—MOTOR BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	−X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING				DIGITAL SCAN	
							CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	−1/10	−1/5				V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE				
SIGNAL	I/O	Pin No.																									V INS	A INS	AV INS	ASSEMBLE	FF	REW
D LOCK	I	IC401 17pin																														
D STOP	O	IC401 6pin	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	

● “L” when drum servo lock

3-13. SYSTEM CONTROL—LOADING MOTOR BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	−X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING					DIGITAL SCAN	
							CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	−1/10	−1/5				V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE					
SIGNAL	I/O	Pin No.																										V INS	A INS	AV INS	ASSEMBLE	FF	REW
C UNLOAD	O	IC402 37pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
C LOAD	O	IC402 38pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
T UNLOAD	O	IC401 37pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
T LOAD	O	IC401 38pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

● Change while the LOADING/UNLOADING

3-14. SYSTEM CONTROL—PLUNGER BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	−X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING				DIGITAL SCAN		
							CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	−1/10	−1/5				V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE					
SIGNAL	I/O	Pin No.																										V INS	A INS	AV INS	ASSEMBLE	FF	REW
LIM PL S	O	IC402 22pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
LIM PL H	O	IC402 23pin	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
UN BRK PL S	O	IC402 24pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
UN BRK PL H	O	IC402 27pin	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	
PINCH PL S	O	IC402 28pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
PINCH PL H	O	IC402 29pin	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	

● S-side becomes “H” by 200msec when H-side becomes “L”→“H”.

3-15. SYSTEM CONTROL—SLOW BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	−X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING				DIGITAL SCAN	
							CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	−1/10	−1/5				V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE				
SIGNAL	I/O	Pin No.																									V INS	A INS	AV INS	ASSEMBLE	FF	REW
STEP	O	IC401 29pin	L	L	L	L	L	L	*L	L	L	P	P	P	P	P	P	L	*L	*L	L	*	L	*	L	*	L	L	L	L	L	L
SLOW	O	IC401 28pin	L	L	L	L	L	L	H	L	L	H	H	H	H	H	H	L	H	L	L	H	L	H	L	H	L	L	L	L	L	L

* “PULSE” when going into PAUSE, and when out of PAUSE

3-16. SYSTEM CONTROL—INDEX BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	−X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING				DIGITAL SCAN			
							CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	−1/10	−1/5				V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE				FF	REW	
V INS	A INS	AV INS																										ASSEMBLE						
IND WRITE	O	IC402 16pin	L	L	L	*	L	L	L	L	L	L	L	L	L	L	*	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
HC CONT	O	IC402 14pin	L	L	L	*	L	L	L	L	L	L	L	L	L	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
IND ERA	O	IC402 15pin	L	L	L	*	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

*“H” during index write.

3-17. SYSTEM CONTROL—MODE CONTROL BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH FR PICTURE SEARCH		PB-P	X2	−X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING				DIGITAL SCAN		
							CUE	REV				FRAME	1/10	1/5	REVERSE FRAME	−1/10	−1/5										REC MODE						
V	V-P	A																			A-P	AV	AV-P	PRE ROOL MODE	V INS	A INS	AV INS	ASSEMBLE	FF	REW			
SO	O	IC401 34pin	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
SI	I	IC401 36pin	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
SCK	I/O	IC401 33pin	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
MECH CS	I	IC401 59pin	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
SLOW CS	I	IC402 61pin	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

●Microcomputer bus line

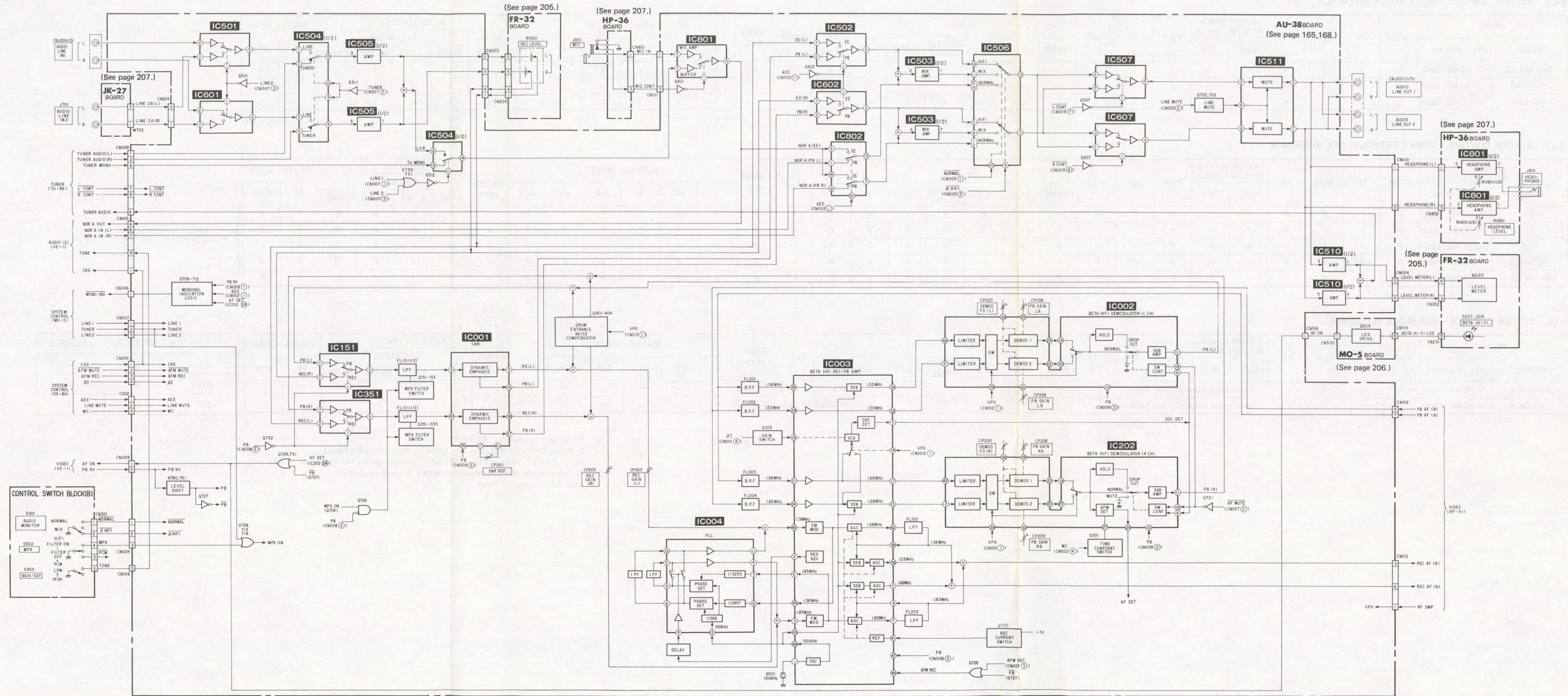
3-18. SYSTEM CONTROL—JOG BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PICTURE SEARCH		PB-P	X2	−X2	SLOW						REC	REC-P	FRAME REC	MANUAL INSERT						AUTO EDITING					DIGITAL SCAN																			
							FR PICTURE SEARCH					FRAME	1/10	1/5	REVERSE FRAME	−1/10	−1/5				V	V-P	A	A-P	AV	AV-P	PRE ROOL MODE	REC MODE				FF	REW																		
CUE	REV	V INS					A INS	AV INS																				ASSEMBLE																							
SIGNAL	I/O	Pin No.																																																	
β MODE A	I	IC401 39pin	—	—	—	Bata mode when playing back						—	—	—	—	—	—	SW MODE	SW MODE	SW MODE	—	—	—	—	—	—	—	—	—	—	—	—	—																		
β MODE B	I	IC401 40pin	—	—	—	Bata mode when playing back						—	—	—	—	—	—	SW MODE	SW MODE	SW MODE	—	—	—	—	—	—	—	—	—	—	—	—	—																		

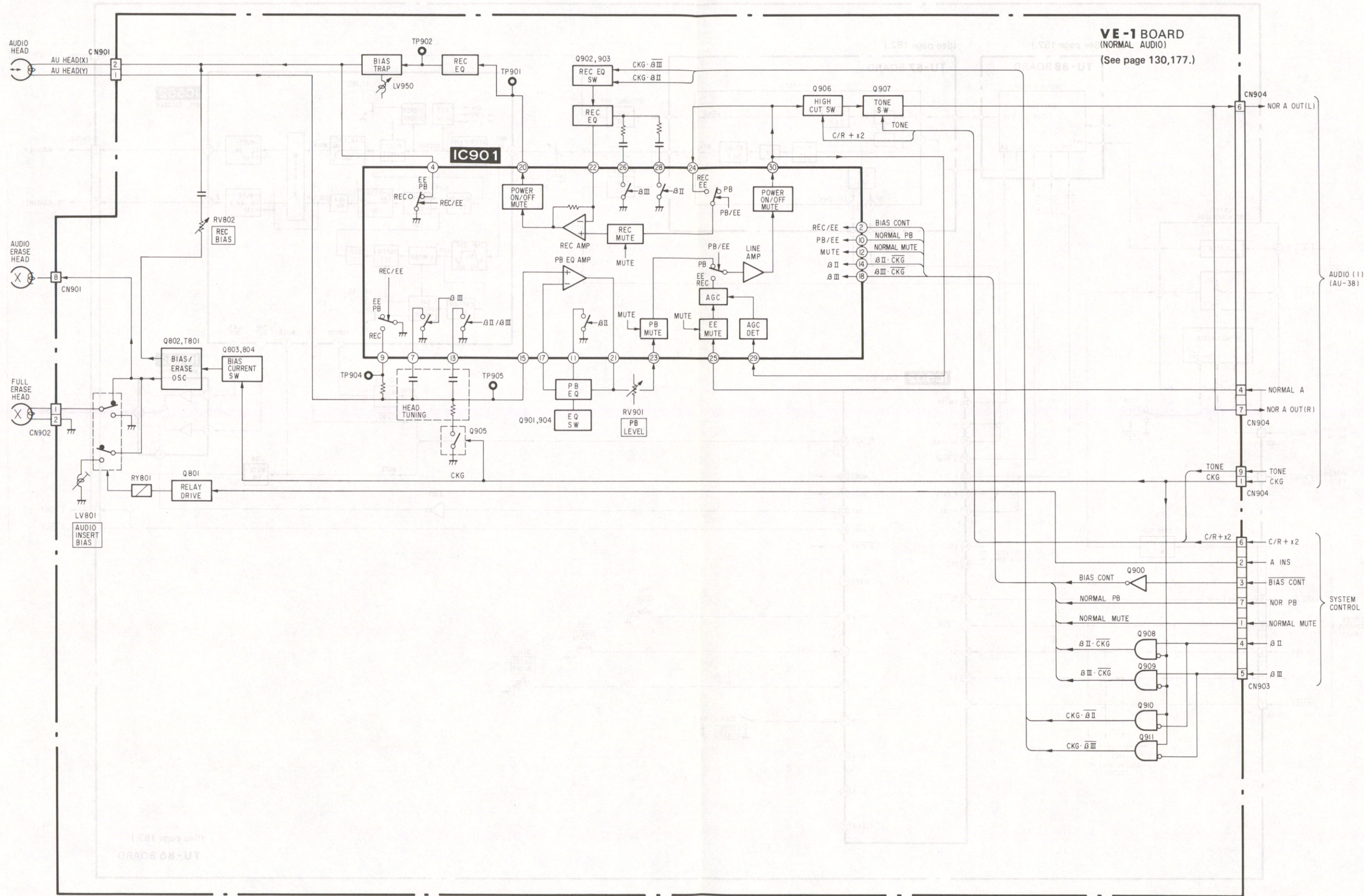
	βMODE A	βMODE B
β I	L	L
β II	H	L
β III	L	H

- Note:
- 1) P : an abbreviation of “PULSE”
 - 2) In frame-by-frame shooting, the following operations are taken :
REC • PAUSE→REC→REC • PAUSE. The table shows the operation of REC only.
 - 3) “—” means the unstable state that either is good, or that what has become of them.

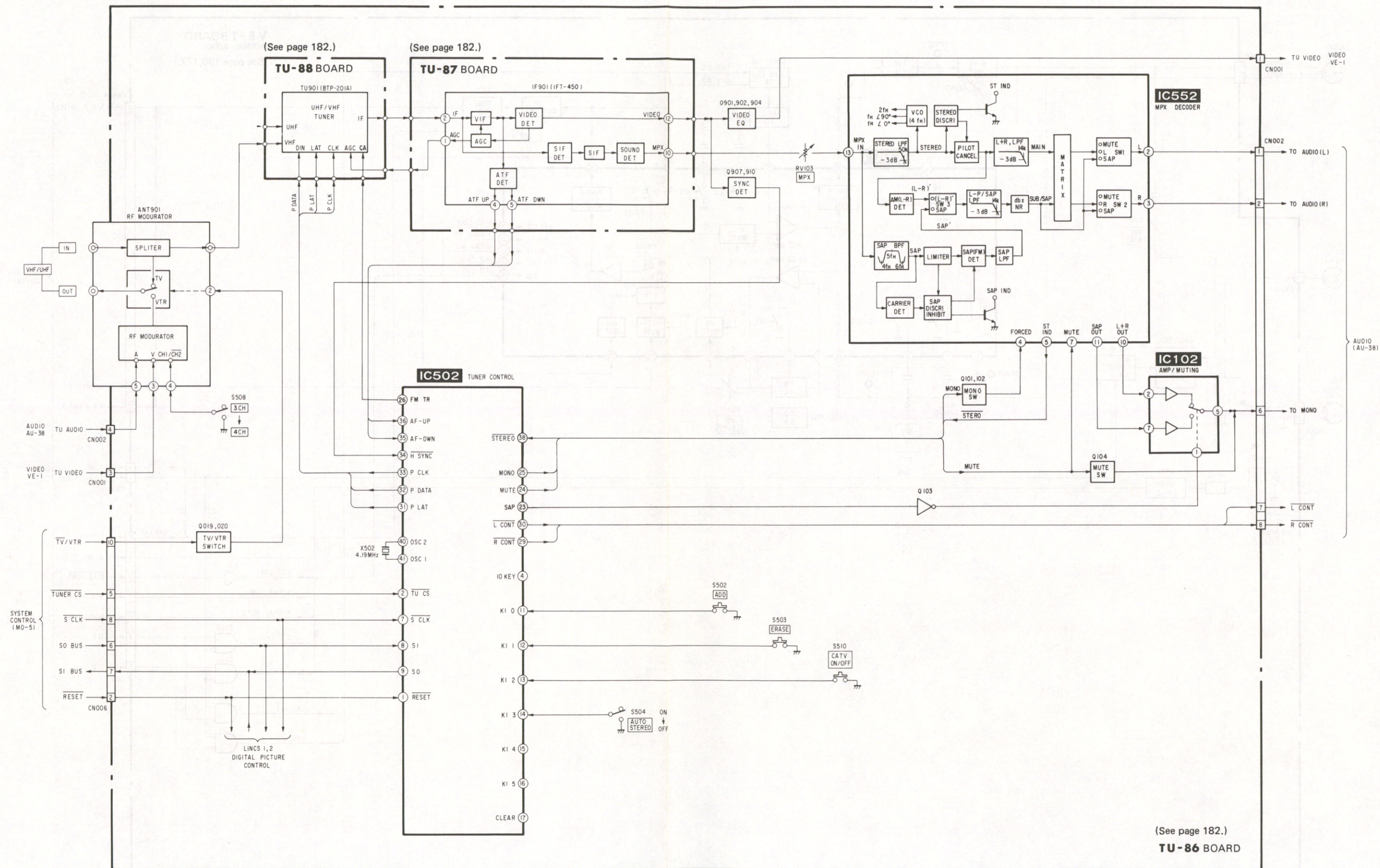
3-19. AUDIO(1) BLOCK DIAGRAM



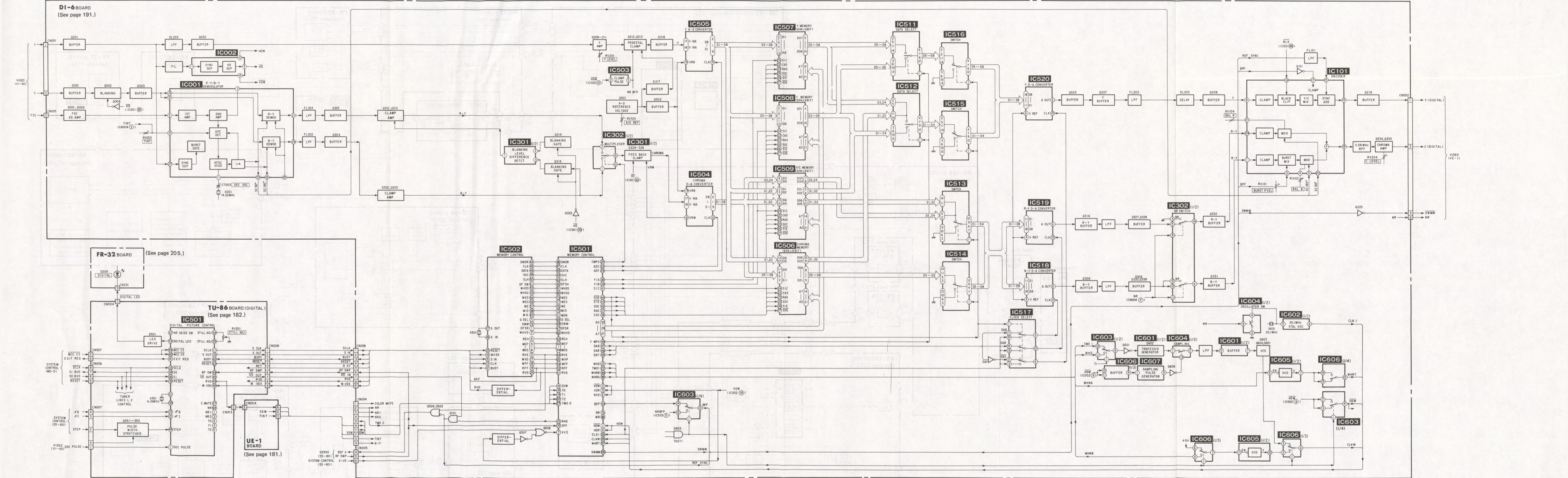
3-20. AUDIO(2) BLOCK DIAGRAM



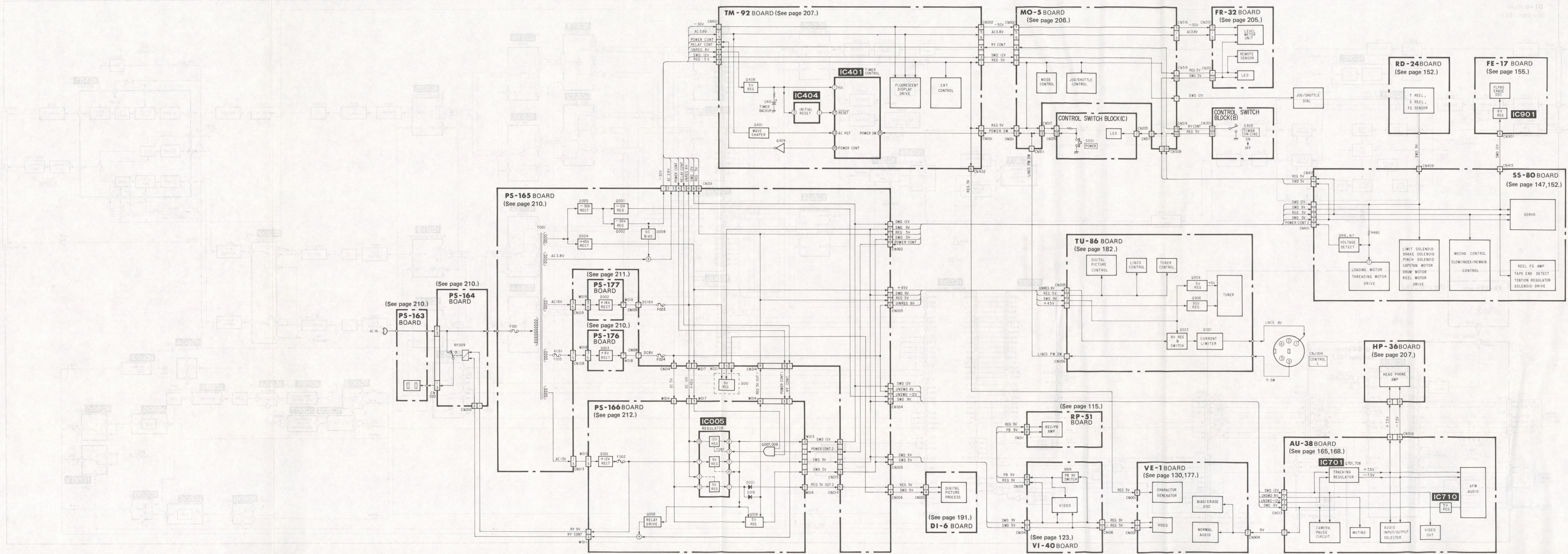
3-21. TUNER BLOCK DIAGRAM

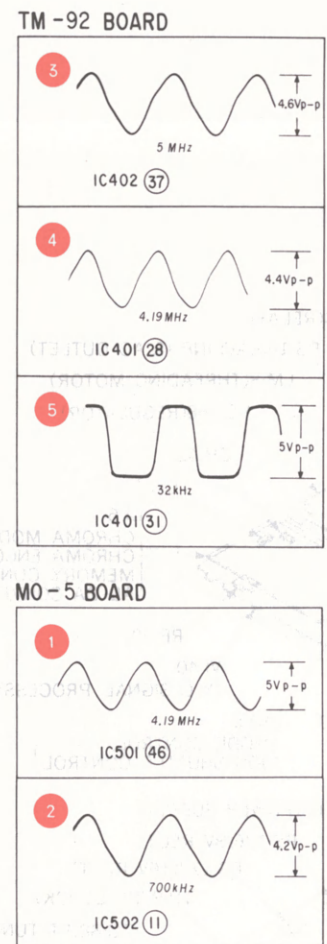


3-22. DIGITAL BLOCK DIAGRAM

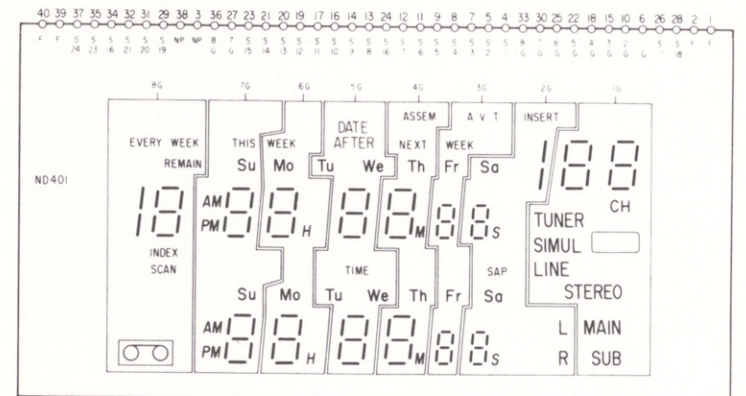


3-23. POWER BLOCK DIAGRAM

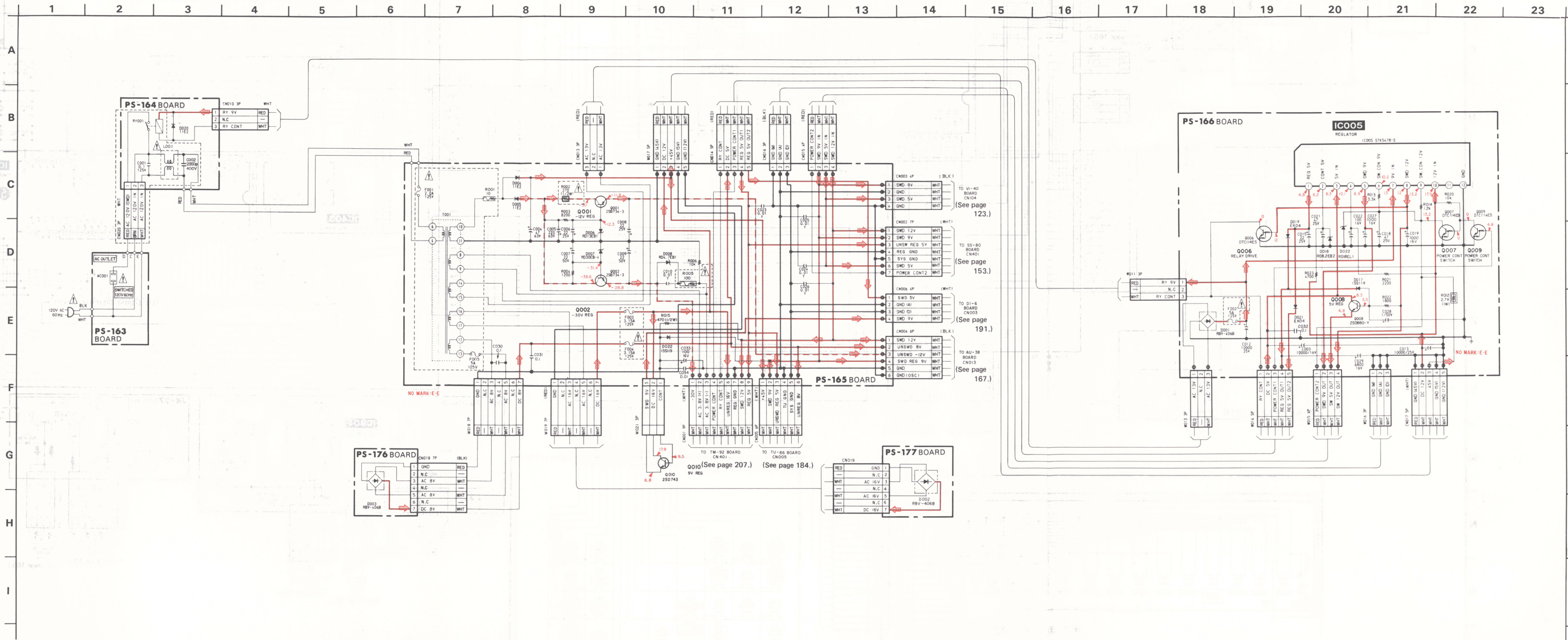
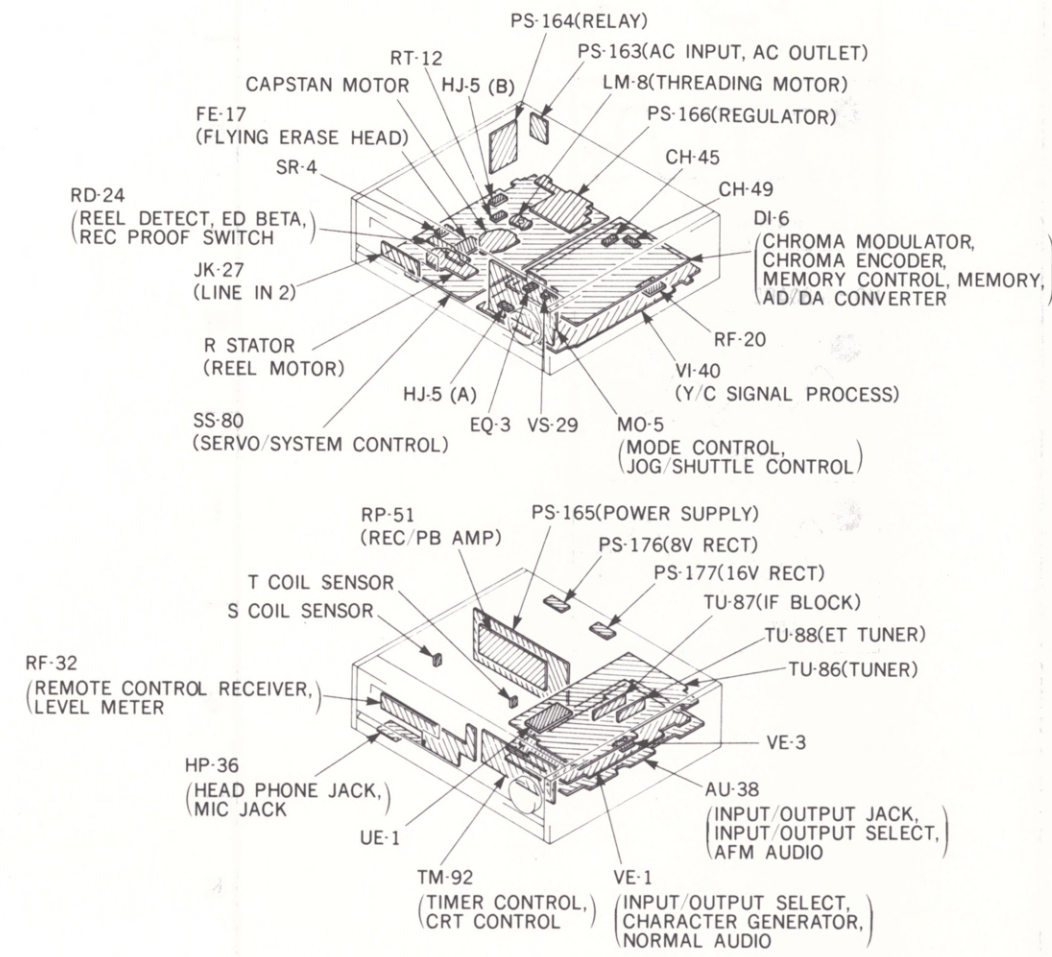


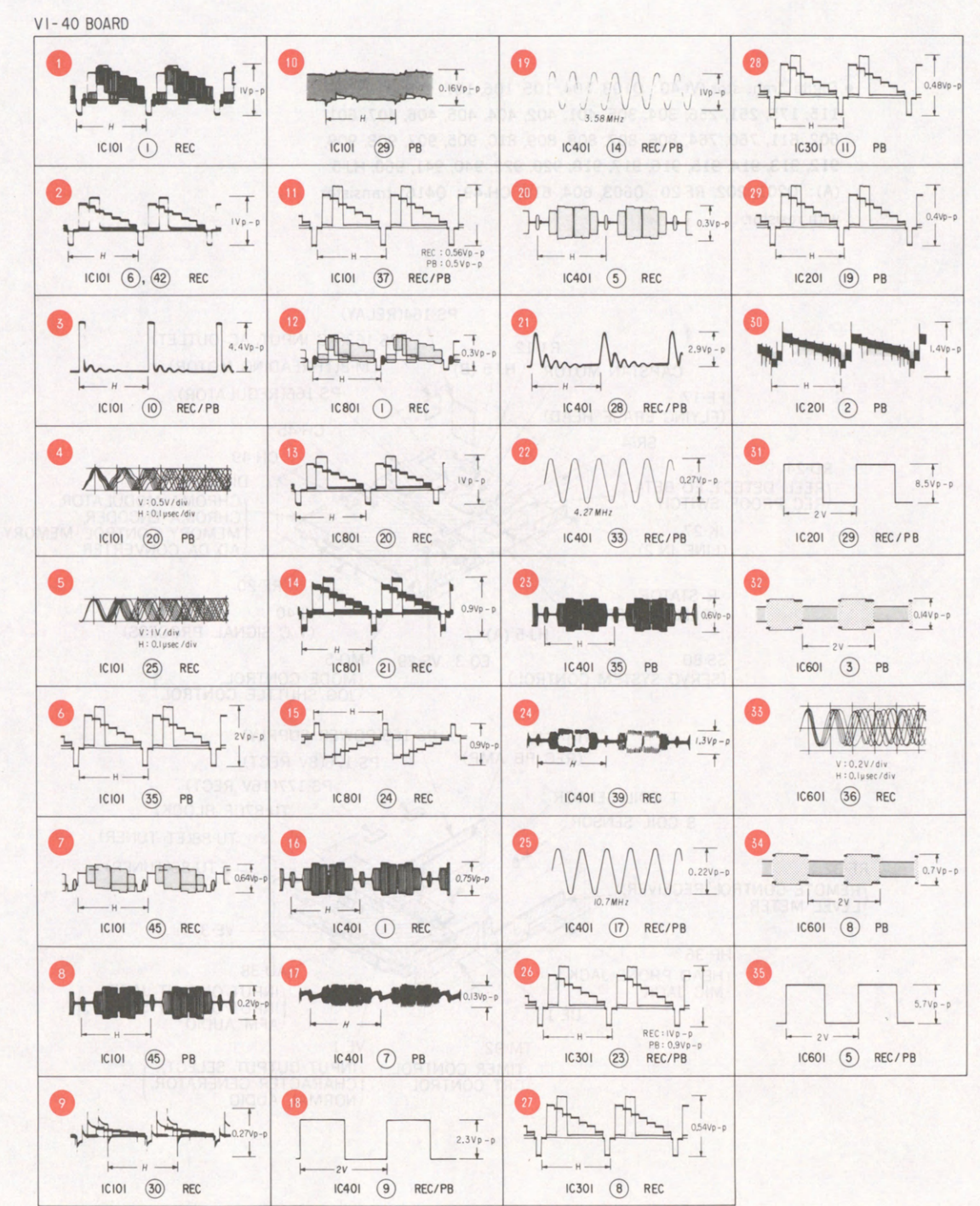
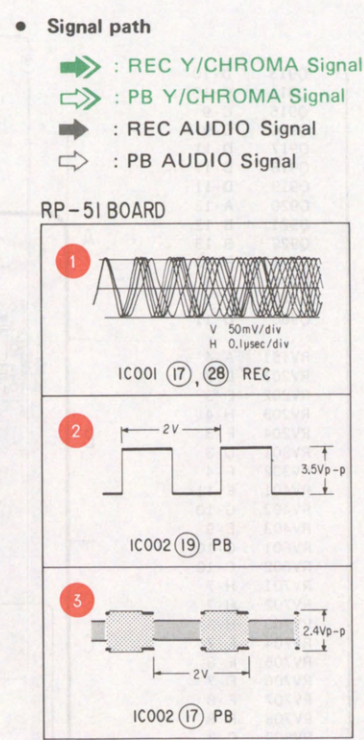
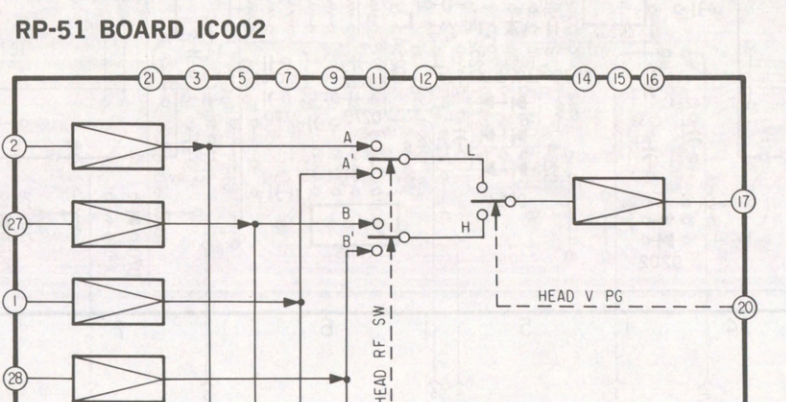
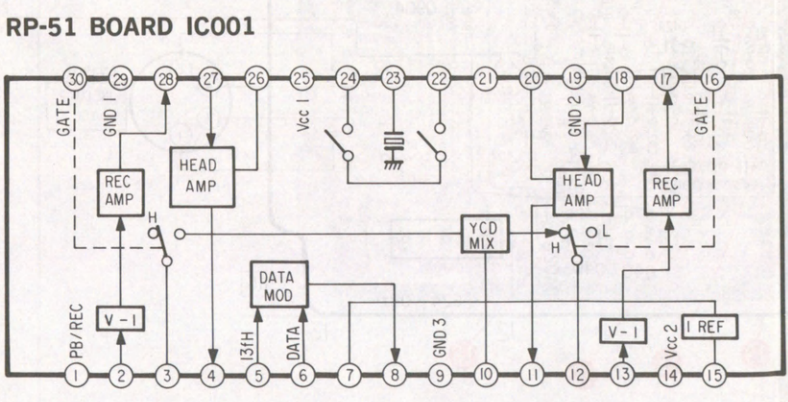
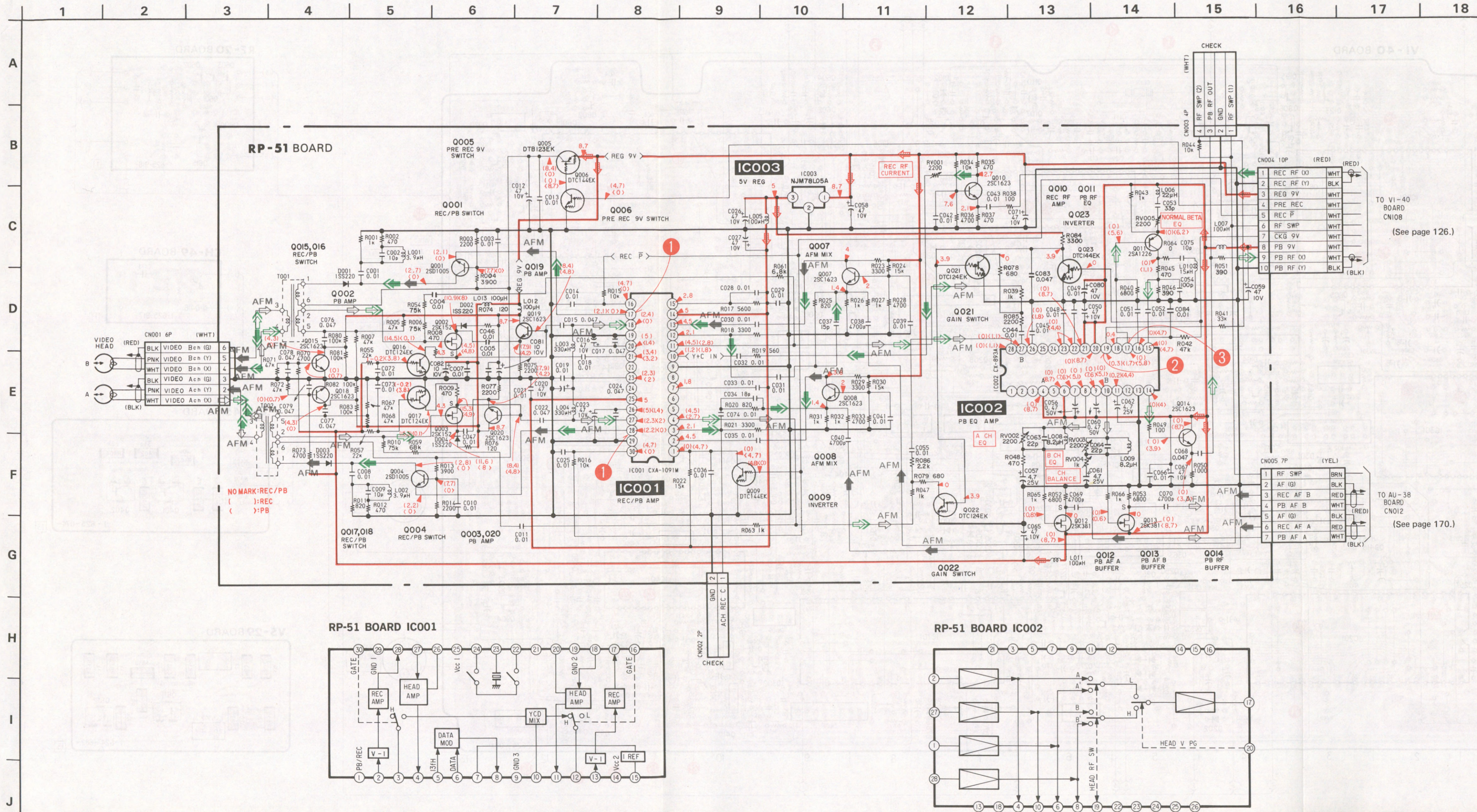


NO MARK: REC/PB
(): REC
(): PB
*: Impossible to measure the
voltage at the marked points.

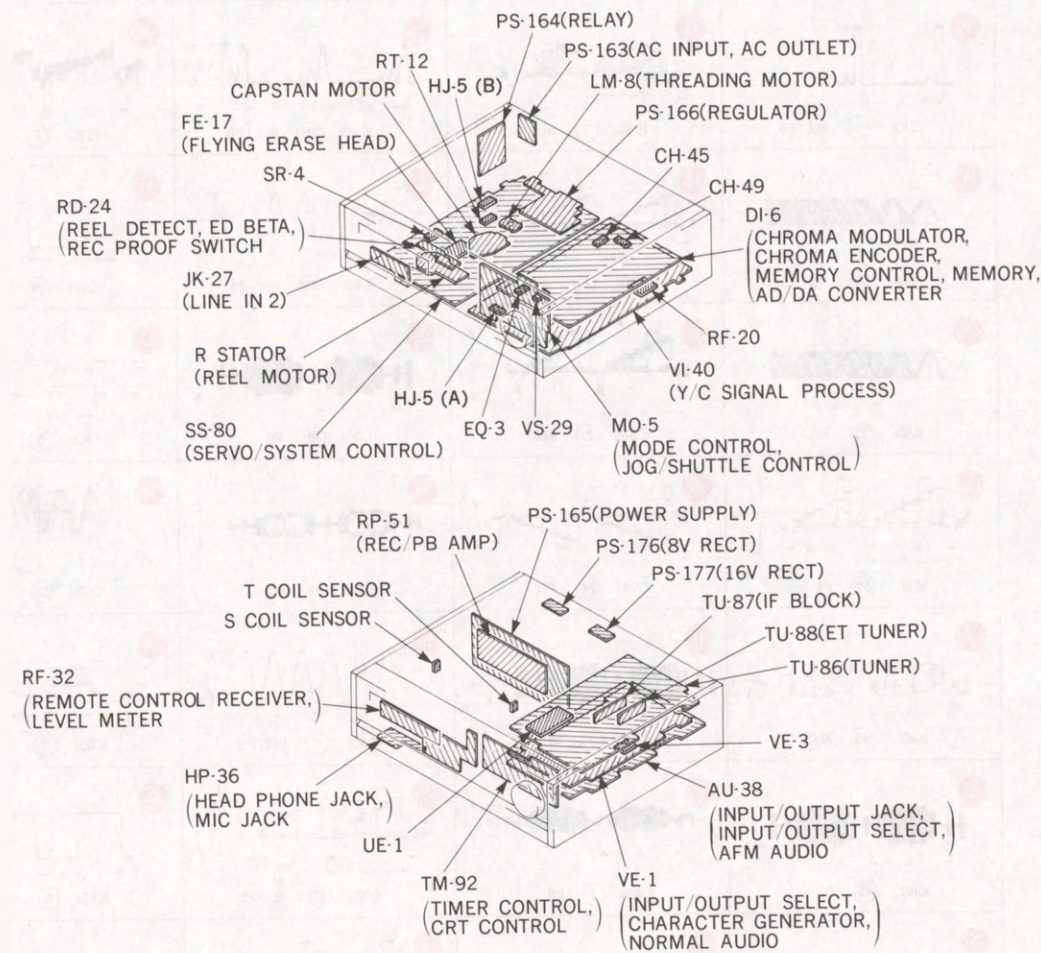


PS-165 (POWER SUPPLY), PS-163 (AC INPUT, AC OUTLET), PS-164 (RELAY), PS-166 (REGULATOR), PS-176 (8V RECT), PS-177 (16V RECT) SCHEMATIC DIAGRAMS
 —Ref. No. PS-165 BOARD: 13,000 series, PS-164 BOARD: 14,000 series, PS-166 BOARD: 15,000 series, PS-176 BOARD: 16,000 series, PS-177 BOARD: 17,000 series—

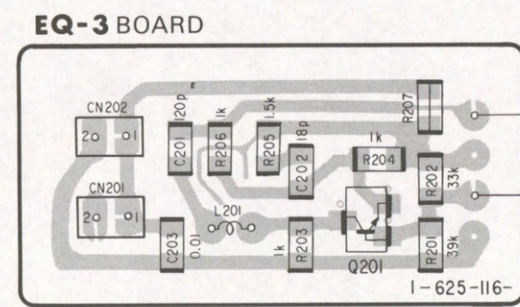


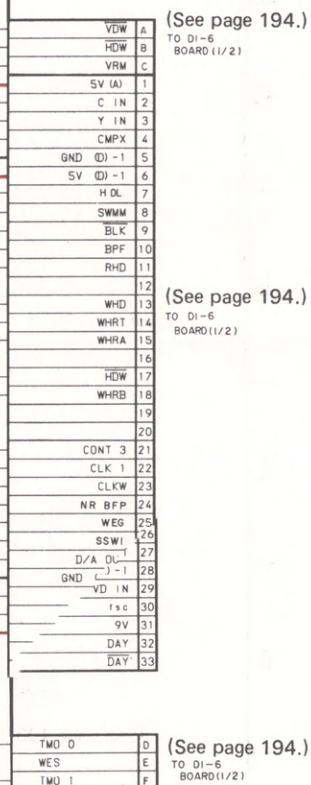


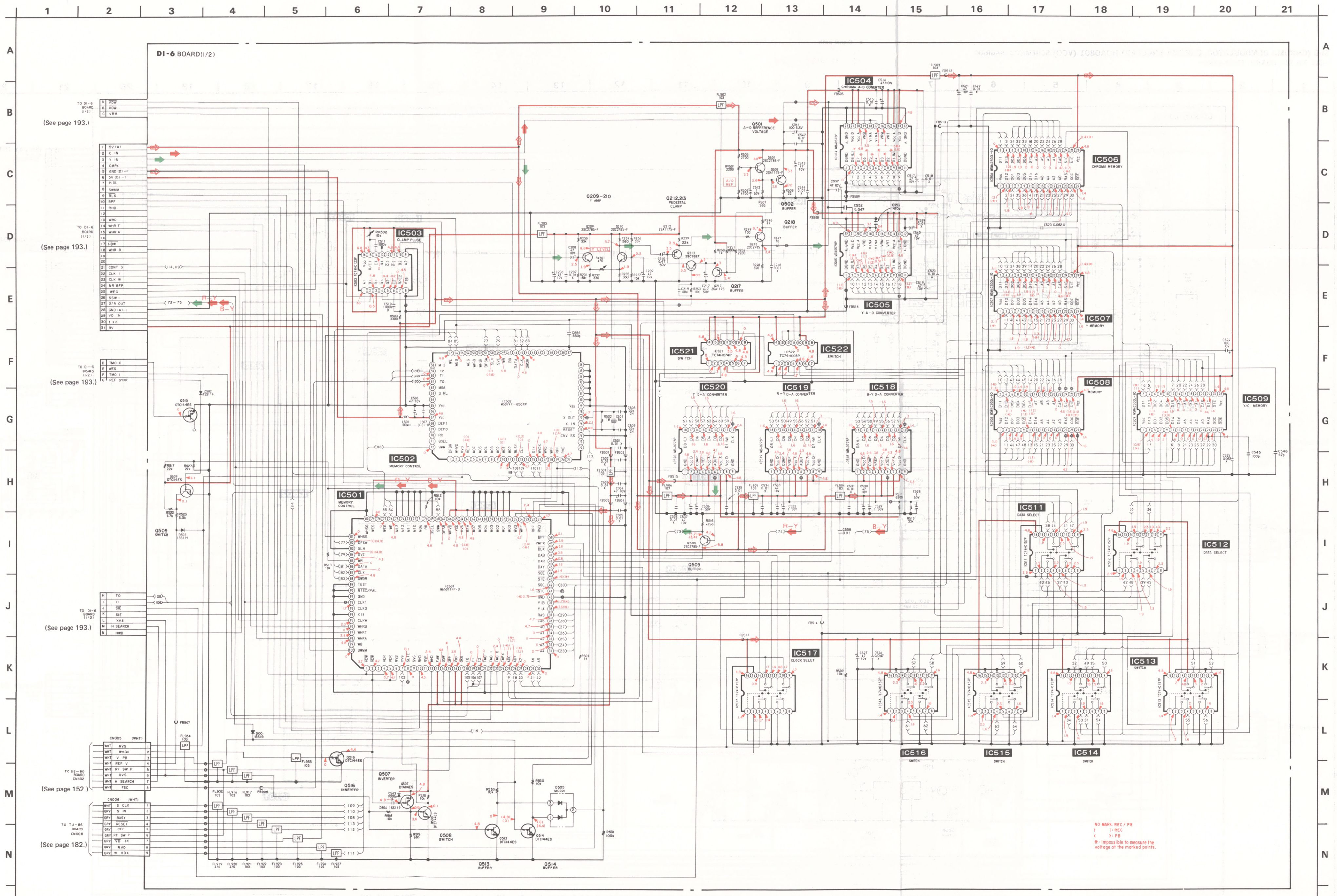
• Digital transistor (VI-40: Q103, 104, 105, 106, 107, 108, 110, 113, 115, 175, 251, 256, 304, 305, 401, 402, 404, 405, 406, 407, 601, 602, 611, 760, 764, 806, 807, 808, 809, 810, 905, 907, 908, 909, 912, 913, 914, 915, 916, 917, 918, 920, 922, 940, 941, 960, HJ-5 (A): Q201, 202, RF-20: Q603, 604, 615, CH-49: Q416) transistor with resistor.



CN101 D-9	IC103 E-6	Q304 F-7	Q913 D-10
CN102 H-12	IC190 D-6	Q305 F-7	Q914 C-10
CN103 D-9	IC201 G-3	Q306 E-3	Q915 C-9
CN104 D-3	IC301 E-2	Q308 E-5	Q916 C-9
CN105 H-6	IC401 F-11	Q310 D-5	Q917 D-11
CN106 H-9	IC402 E-11	Q361 F-4	Q918 D-11
CN107 D-12	IC601 B-11	Q362 F-5	Q919 A-11
CN108 C-12	IC701 G-8	Q303 F-5	Q920 A-13
CN109 G-9	IC801 B-1	Q382 D-5	Q921 B-12
CN110 E-8		Q401 E-10	Q922 B-13
CN111 B-12	LV151 A-5	Q402 E-10	Q923 B-13
CN112 D-8	LV801 B-1	Q403 E-10	Q940 F-3
CN113 E-7		Q404 E-9	Q941 F-3
CN114 A-12	Q103 A-7	Q405 H-12	Q960 D-11
CN201 C-5	Q104 B-7	Q406 E-9	
CN202 C-5	Q105 A-7	Q407 H-11	RV151 A-4
CN901 F-5	Q106 A-7	Q408 E-9	RV201 D-7
CN902 E-5	Q107 A-7	Q409 H-10	RV202 F-3
	Q108 A-7	Q410 H-10	RV203 H-4
	Q109 C-6	Q411 E-11	RV204 F-3
D101 B-7	Q110 A-6	Q412 E-11	RV301 D-3
D102 A-7	Q111 A-5	Q415 E-10	RV302 F-4
D105 B-8	Q113 B-8	Q480 F-12	RV401 E-11
D108 E-6	Q115 B-8	Q601 A-12	RV402 E-10
D109 E-6	Q123 A-3	Q602 A-12	RV403 E-9
D201 C-8	Q162 C-5	Q604 A-9	RV601 C-10
D202 H-4	Q163 D-3	Q611 B-9	RV602 C-10
D251 G-5	Q164 D-4	Q760 F-8	RV701 H-7
D253 H-5	Q165 D-4	Q764 F-8	RV702 H-7
D254 H-5	Q175 E-5	Q801 D-5	RV703 H-8
D270 G-5	Q195 A-3	Q802 B-4	RV704 F-7
D301 E-3	Q202 C-7	Q803 B-4	RV705 F-8
D303 F-6	Q205 D-8	Q805 C-3	RV706 F-7
D401 E-10	Q206 D-6	Q806 A-3	RV707 F-8
D402 H-12	Q208 D-7	Q807 A-4	RV708 F-8
D602 A-9	Q250 F-5	Q808 B-3	RV802 C-3
D603 D-12	Q251 G-5	Q809 B-3	RV804 A-3
D604 D-12	Q252 G-5	Q810 B-4	RV805 A-2
D701 H-7	Q254 G-6	Q850 C-5	RV806 C-1
D702 F-7	Q256 C-7	Q901 D-12	RV809 B-4
D703 F-7	Q257 G-1	Q902 E-12	RV810 B-1
D786 H-8	Q261 G-1	Q903 F-12	
D804 C-1	Q270 H-6	Q904 G-12	
D901 C-9	Q277 G-6	Q905 D-10	
D902 D-11	Q278 F-6	Q906 D-10	
D903 B-13	Q279 F-6	Q908 C-8	
D904 C-9	Q301 G-10	Q909 C-8	
	Q302 H-10	Q912 D-10	
IC101 B-6	Q303 F-7		
IC102 C-4			







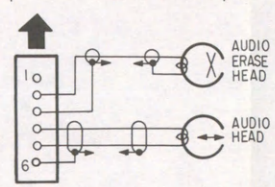
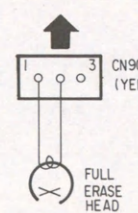
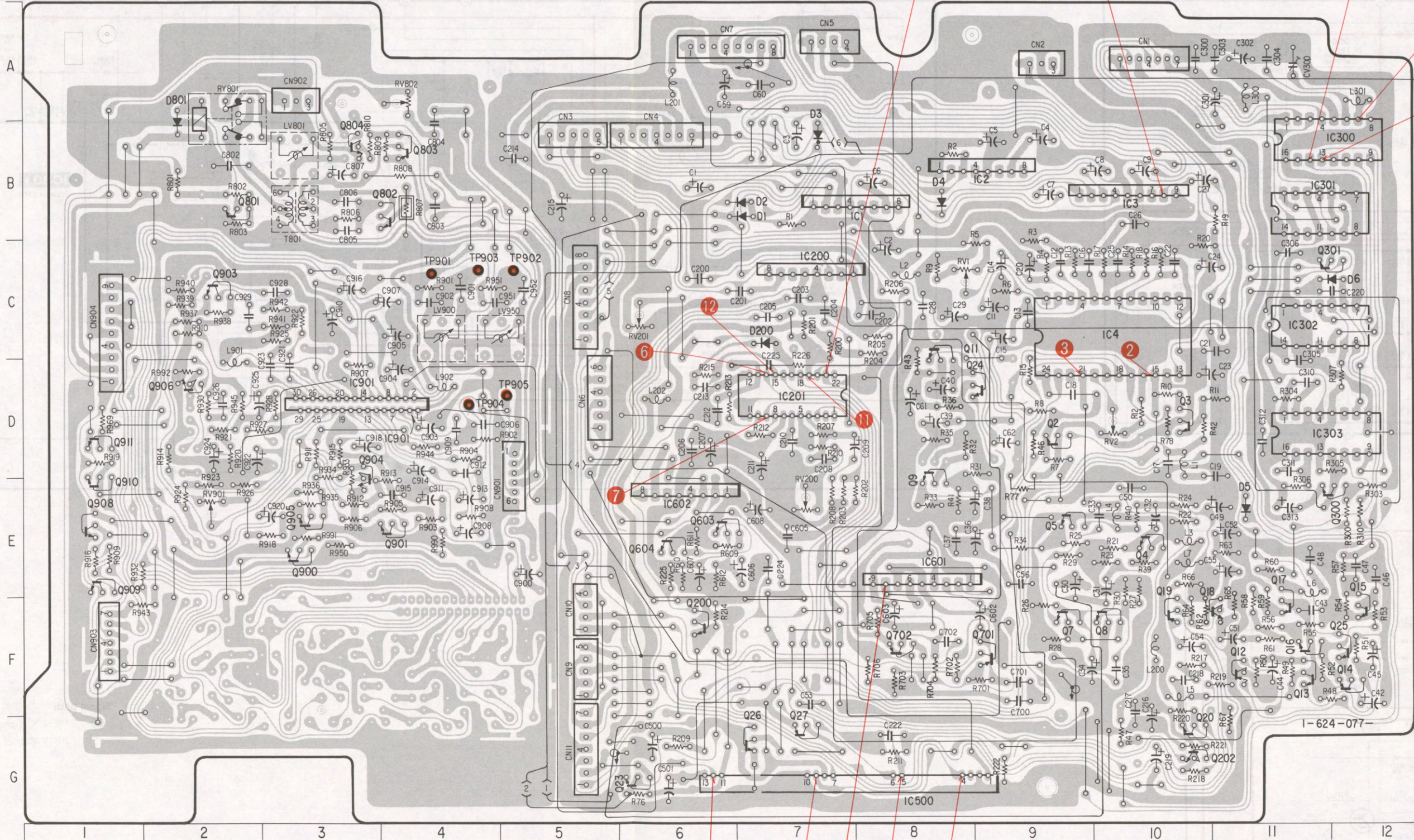
VE-1 (I/O SELECT, CHARACTER GENERATOR), VE-3 PRINTED WIRING BOARDS

—Ref. No. VE-1, VE-3 BOARD: 5,000 series—

CN1 A-10
CN2 A-9
CN3 B-5
CN4 B-6
CN5 A-7
CN6 D-5
CN7 A-6
CN8 C-5
CN9 F-5
CN10 F-5
CN11 G-5
CN901 E-5
CN902 F-1
CN903 F-1
CN904 C-1
CV300 A-11
D1 B-7
D2 B-7
D3 B-7
D4 B-8
D5 E-11
D6 C-12
D200 C-7
D801 A-2
IC1 B-8
IC2 B-9
IC3 B-10
IC4 C-10
IC200 C-7
IC201 D-7
IC300 B-11
IC301 B-11
IC302 C-11
IC303 D-11
IC500 G-8
IC601 E-8
IC602 E-6
IC901 D-3
LV801 B-3
LV950 C-4
Q2 D-9
Q3 D-10
Q4 E-10
Q5 E-9
Q7 F-9
Q8 F-10
Q9 D-8
Q10 D-8
Q11 D-8
Q12 F-11
Q13 F-11
Q14 F-12
Q15 F-12
Q16 F-11

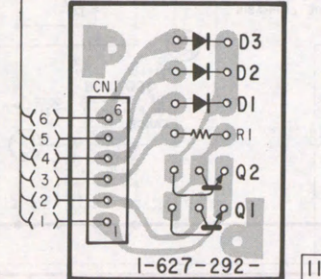
Q17 F-11
Q18 F-10
Q19 F-10
Q23 G-6
Q24 D-9
Q25 F-12
Q26 G-7
Q27 G-7
Q200 F-6
Q201 G-10
Q202 G-10
Q300 E-12
Q301 C-12
Q701 F-9
Q702 F-8
Q801 B-2
Q802 B-4
Q803 B-4
Q804 B-3
Q900 E-3
Q901 E-4
Q902 C-2
Q903 C-2
Q904 E-3
Q905 E-3
Q906 D-2
Q908 E-1
Q909 E-1
Q910 E-1
Q911 D-1
RV1 C-8
RV2 D-10
RV200 E-7
RV201 C-6
RV202 A-4
RV901 E-2
TP901 C-4
TP902 C-5
TP903 C-4
TP904 C-4
TP905 D-5

VE-1 BOARD

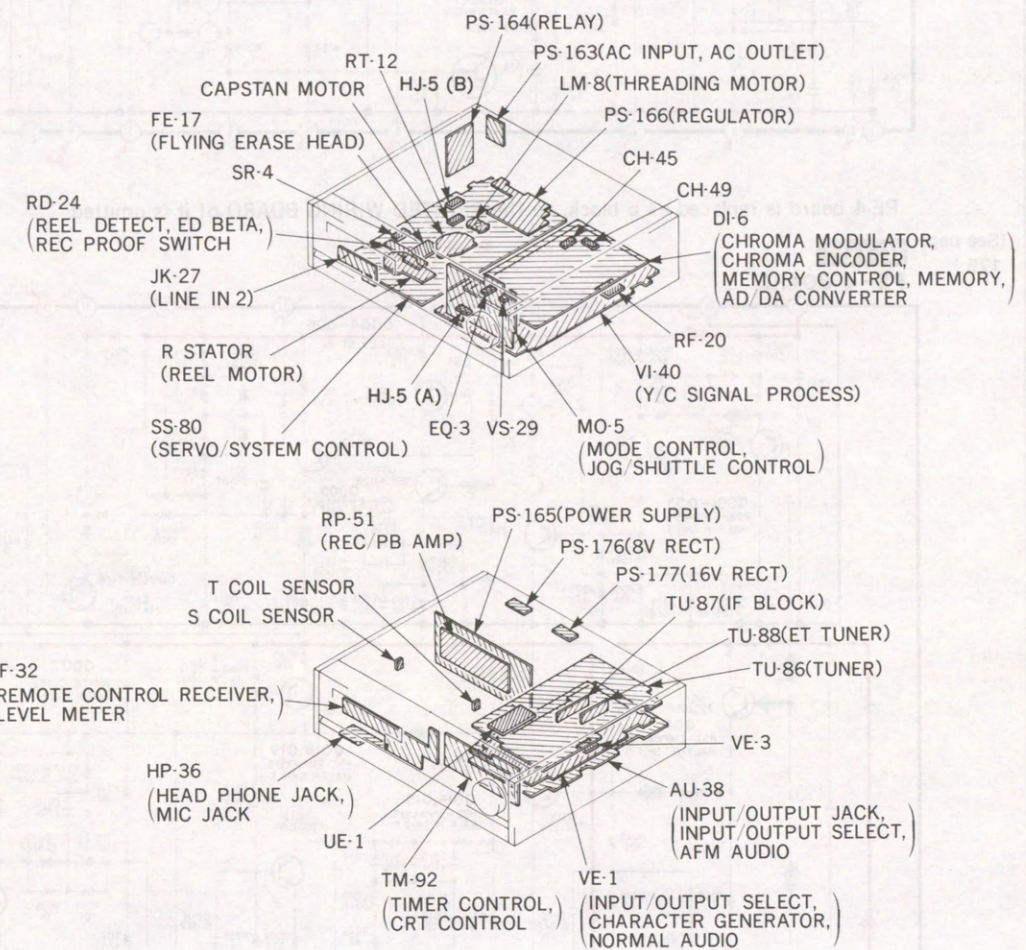


VIDEO (3) VIDEO (3)

VE-3 BOARD



• Digital transistor (VE-1: Q023, 025, 026, 027, 301, 702, 804, 900, 906, 908, 909, 910, 911 VE-3: Q001, 002) transistor with resistor.

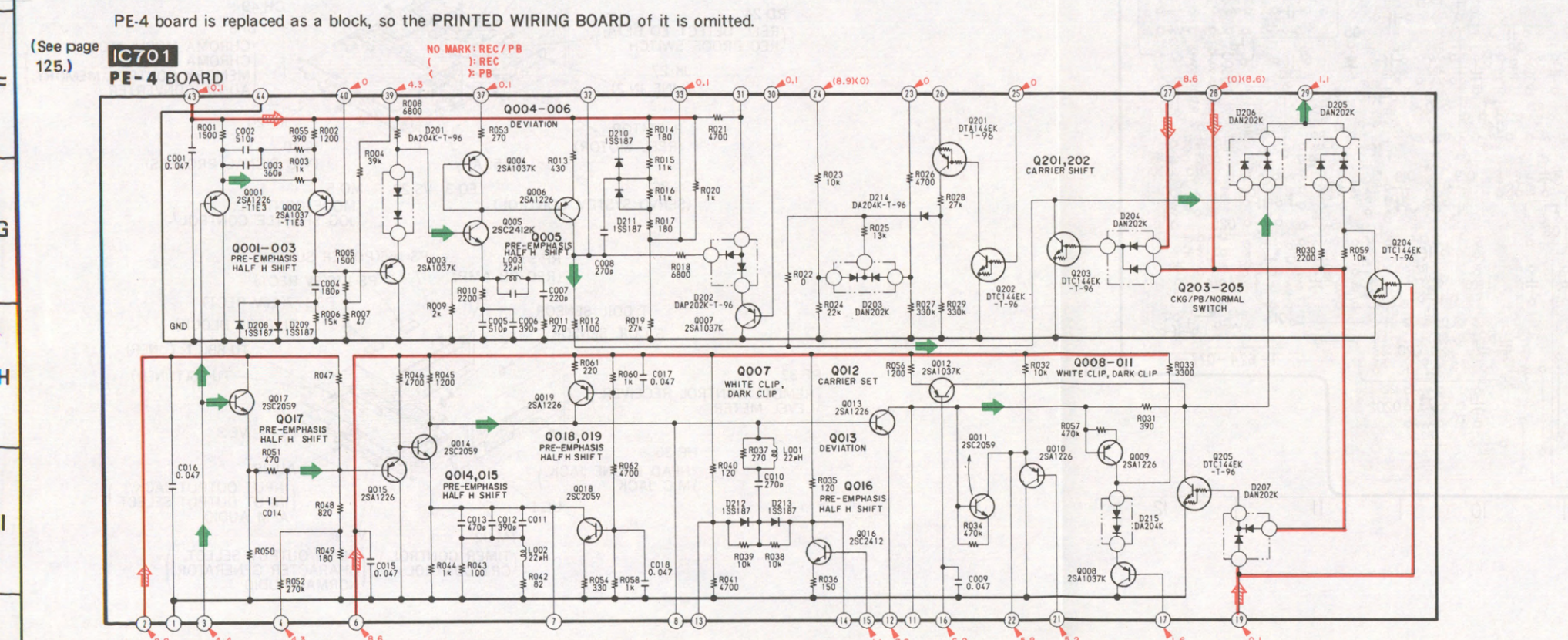
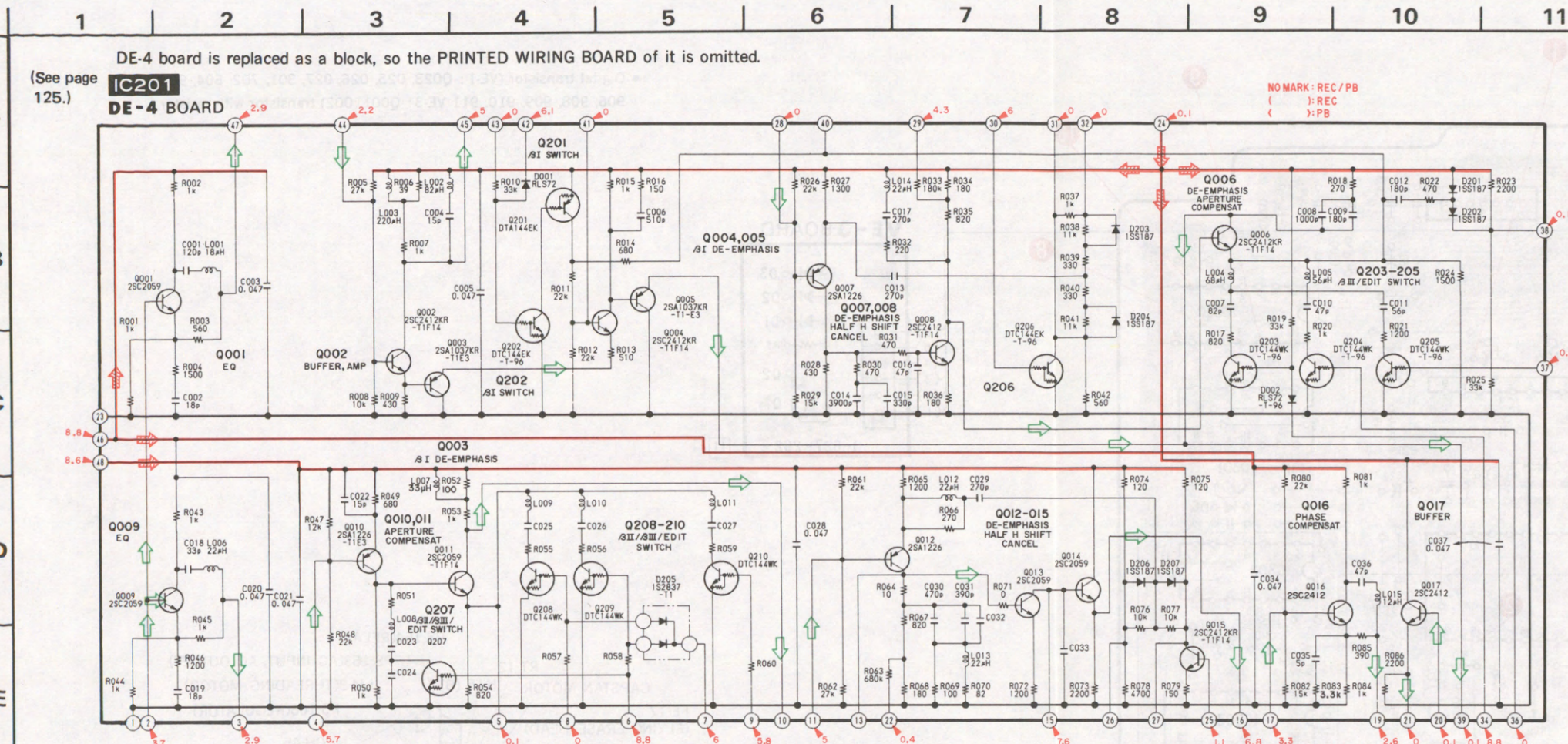


EDV-9300/9500

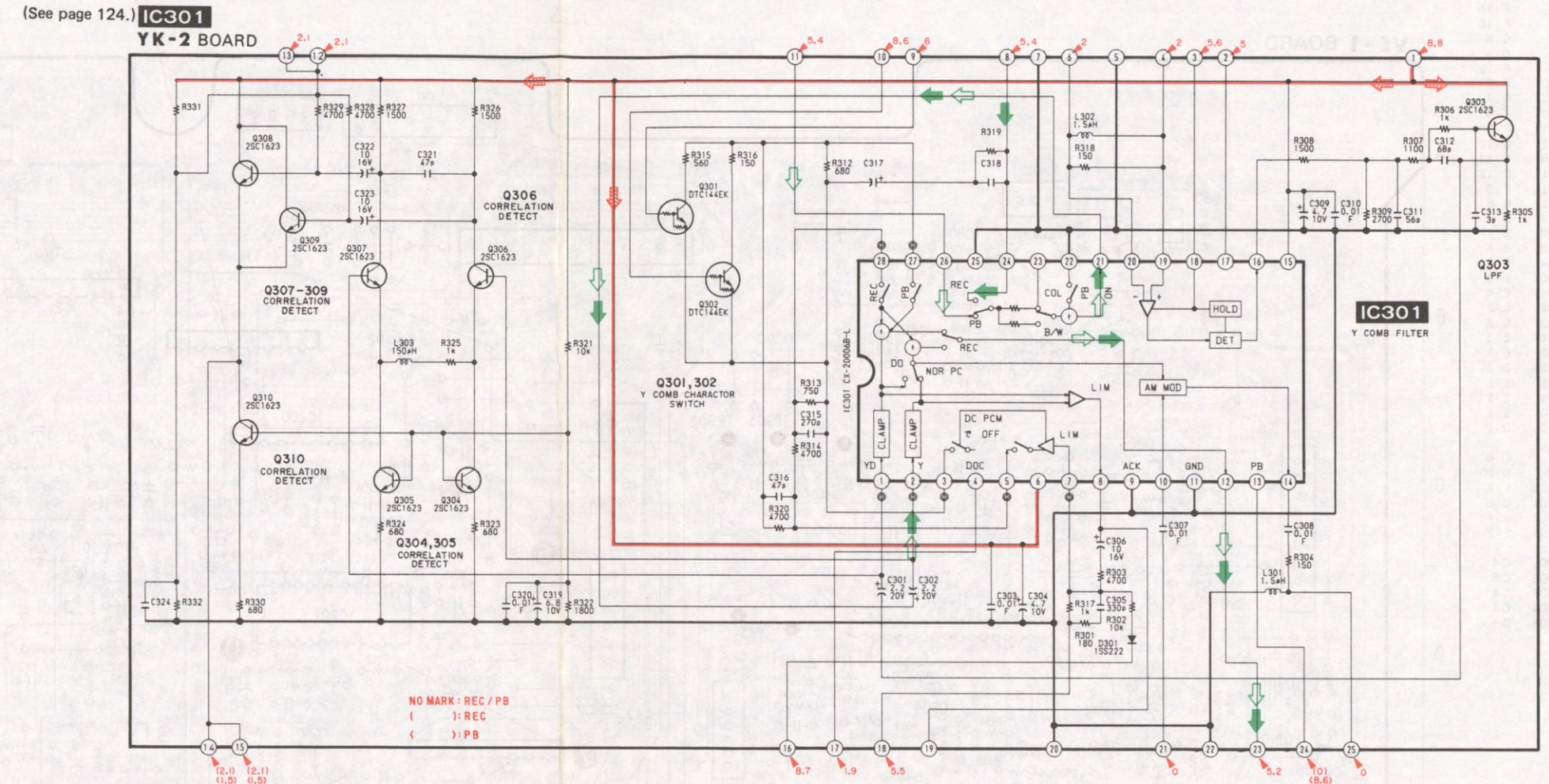
—135—

VIDEO (3)

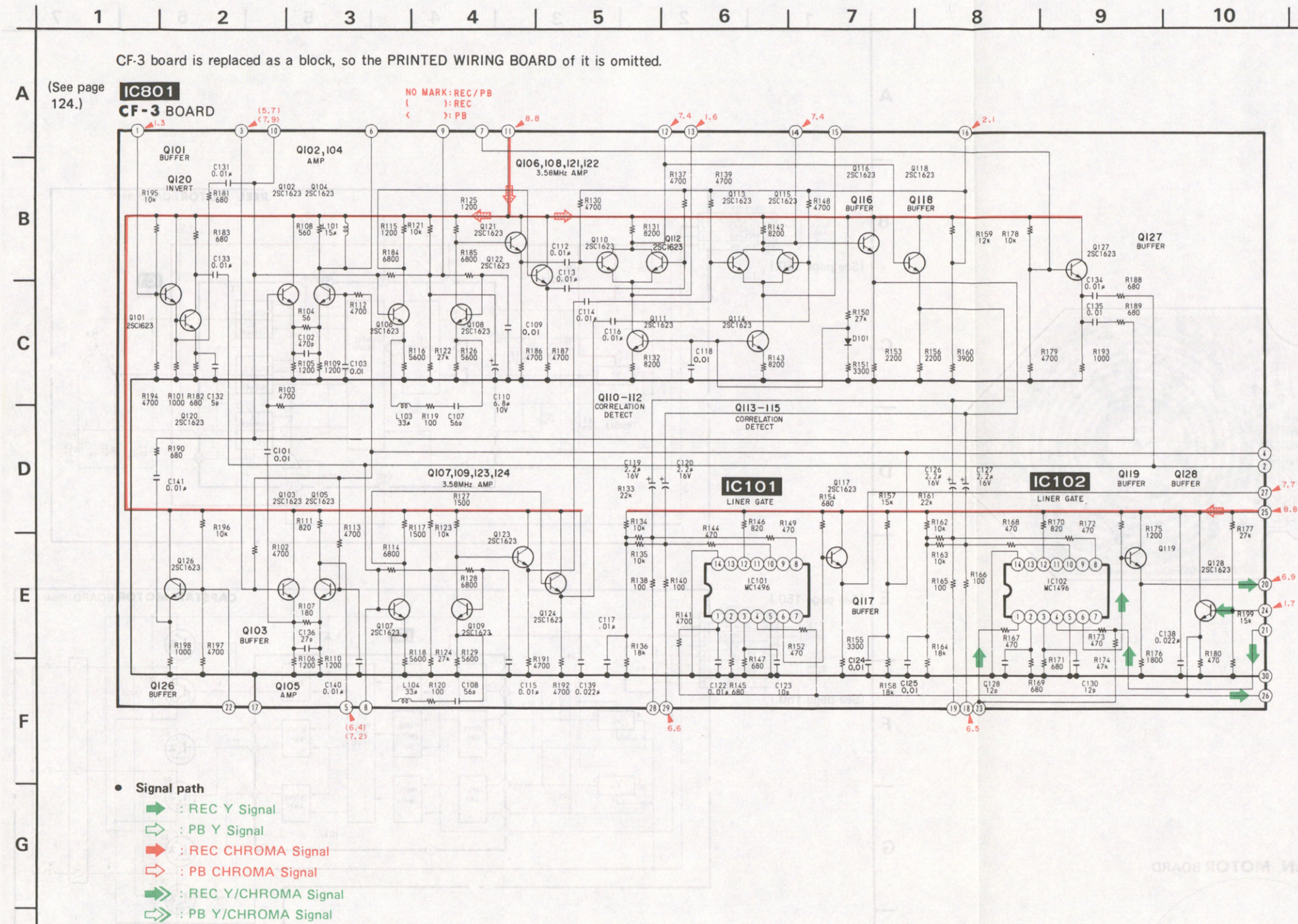
DE-4 (DE-EMPHASIS), PE-4 (PRE-EMPHASIS), YK-2 (Y COMB FILTER) SCHEMATIC DIAGRAM



YK-2 board is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.
(See page 124.)



- Signal path
- REC Y Signal
- PB Y Signal



YF-2 board is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.

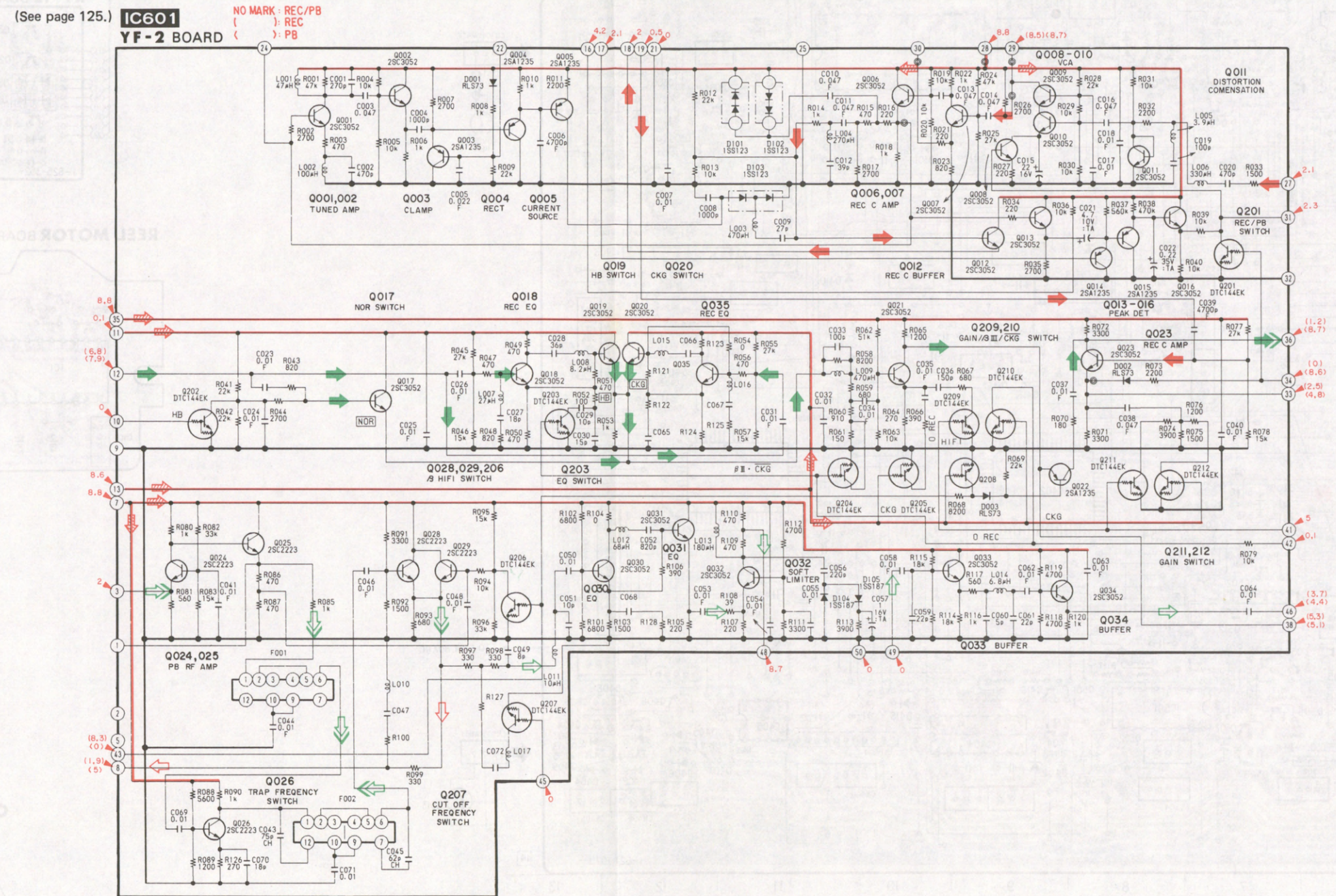
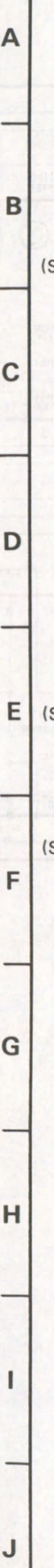
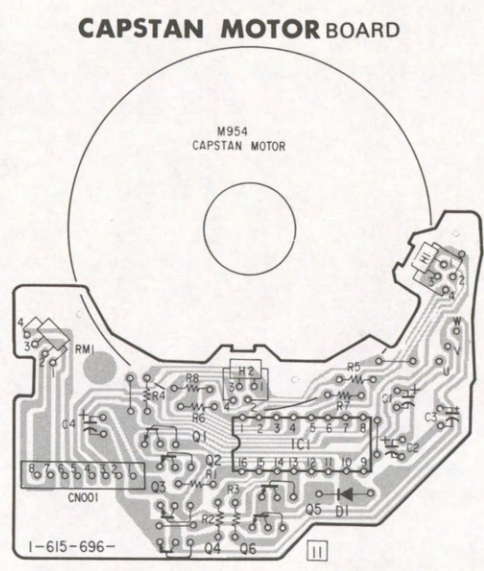
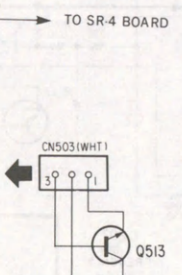


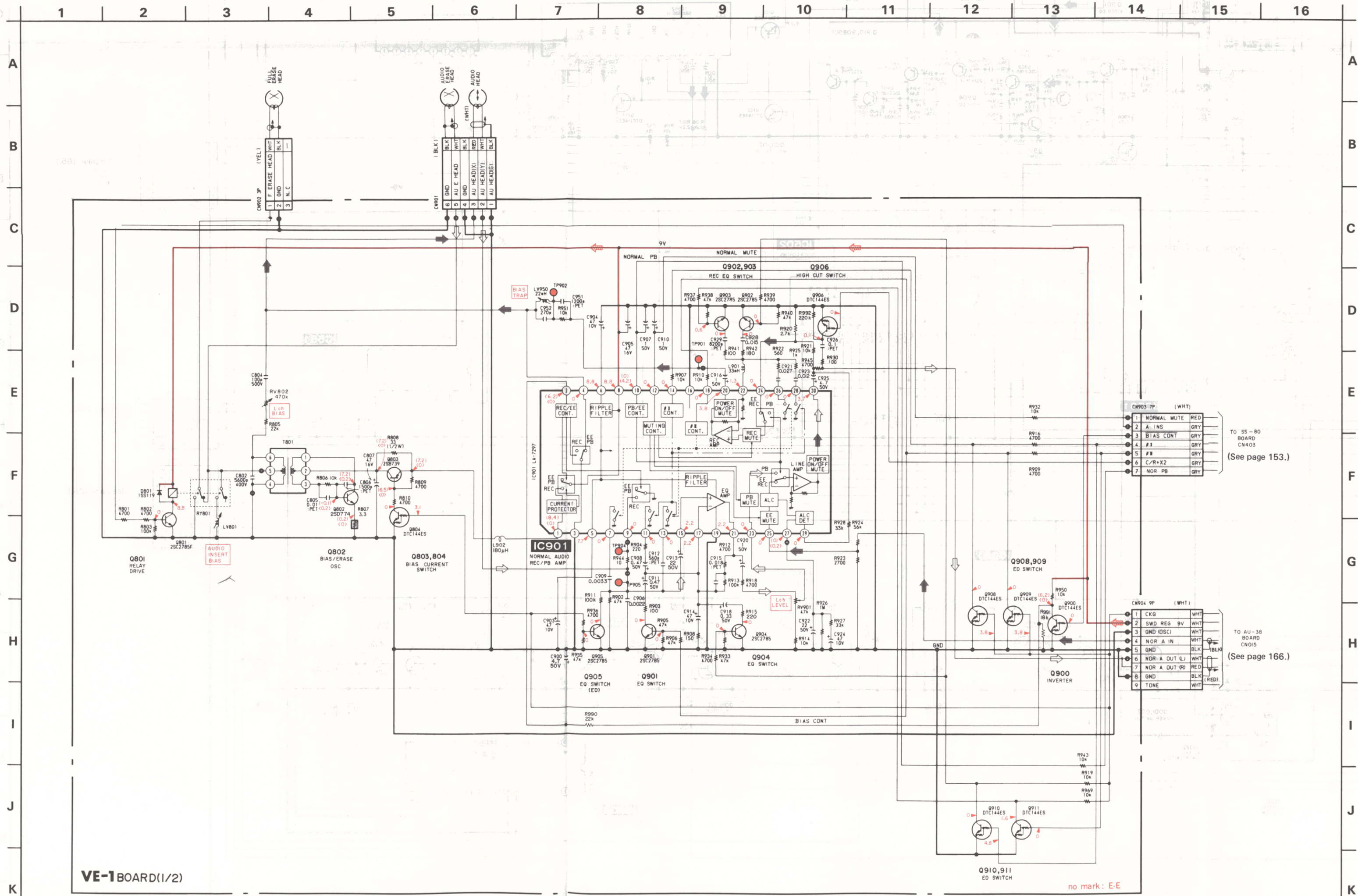
Diagram illustrating the components of the Sony CCD camera chassis, showing the internal layout and connections. The components are labeled as follows:

- RT-12
- PS-164(RELAY)
- PS-163(AC INPUT, AC OUTPUT)
- LM-8(THREADING MOTOR)
- PS-166(REGULATOR)
- CH-45
- CH 49
- DI-6
- CHROMA M
- CHROMA B
- MEMORY (C
- AD/DA CO
- RF-20
- VI-40
- (Y/C SIGNAL PROC
- MO-5
- (MODE CONTROL, JOG SHUTTLE CONTROL)
- EQ-3
- VS-29
- HJ-5 (A)
- SS-80
- (SERVO/SYSTEM CONTROL)
- R STATOR (REEL MOTOR)
- JK-27
- (LINE IN 2)
- SR-4
- FE-17
- (FLYING ERASE HEAD)
- CAPSTAN MOTOR
- HJ-5 (B)
- D-24
- REEL DETECT, ED BETA, REC PROOF SWITCH



EDV-9300/9500

VE-1 (NORMAL AUDIO) SCHEMATIC DIAGRAM
 —Ref. No. VE-1 BOARD: 5,000 series—



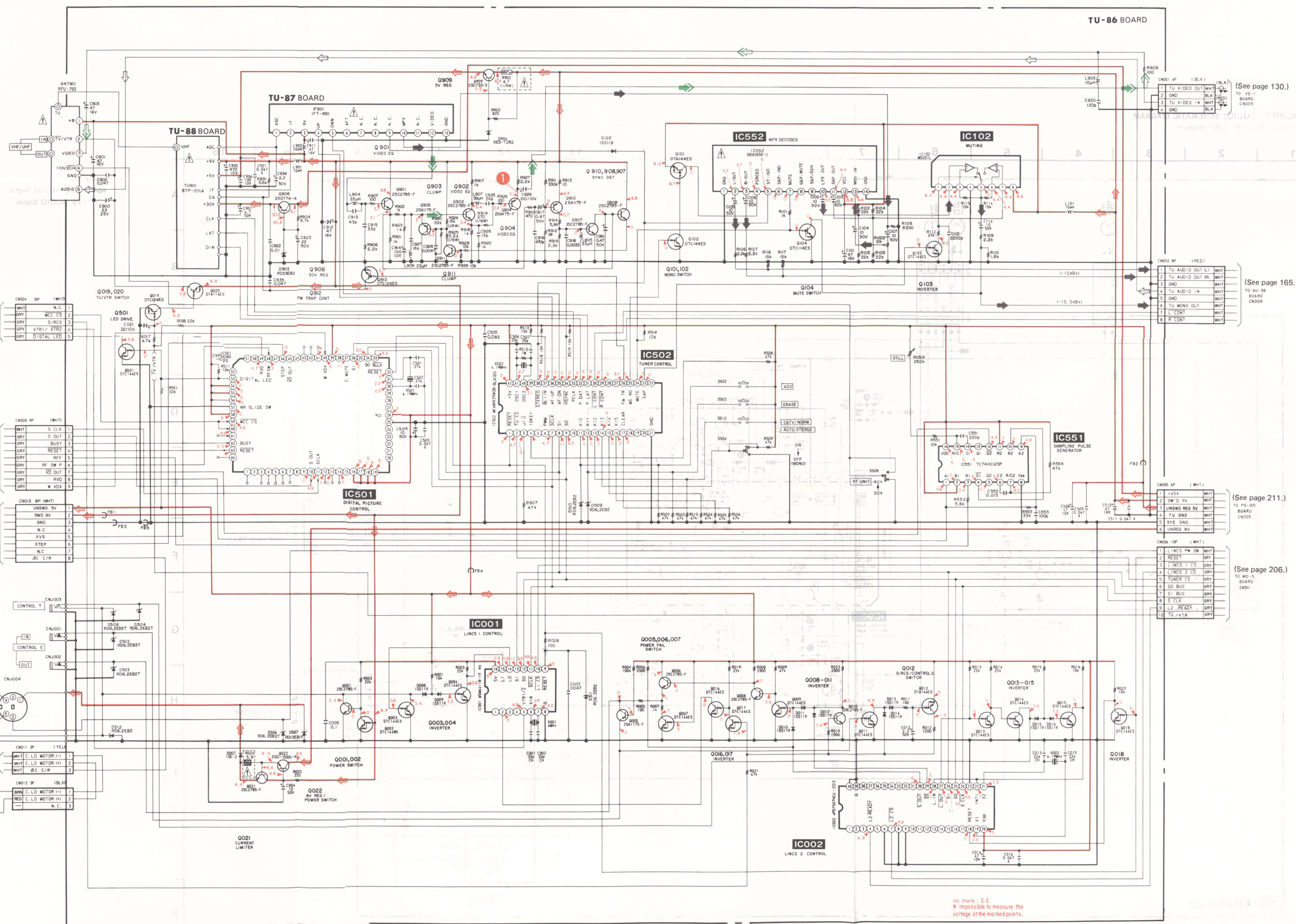
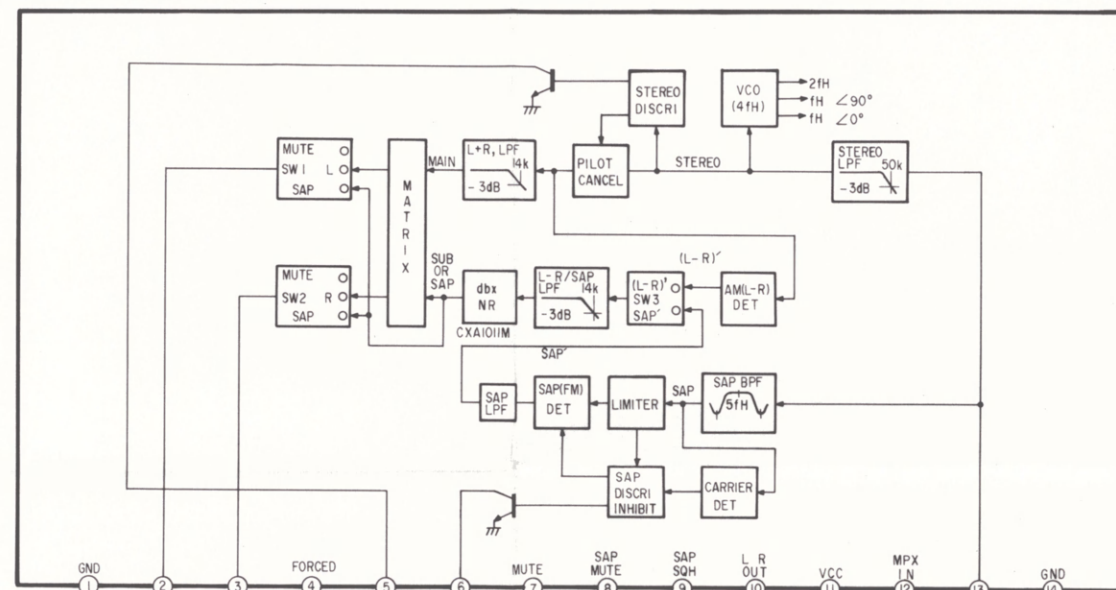
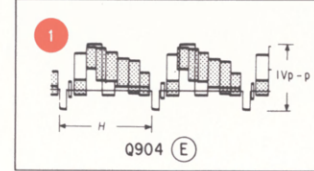
• Signal path
 — : REC AUDIO Signal
 - - - : PB AUDIO Signal

VE-1 BOARD(1/2)

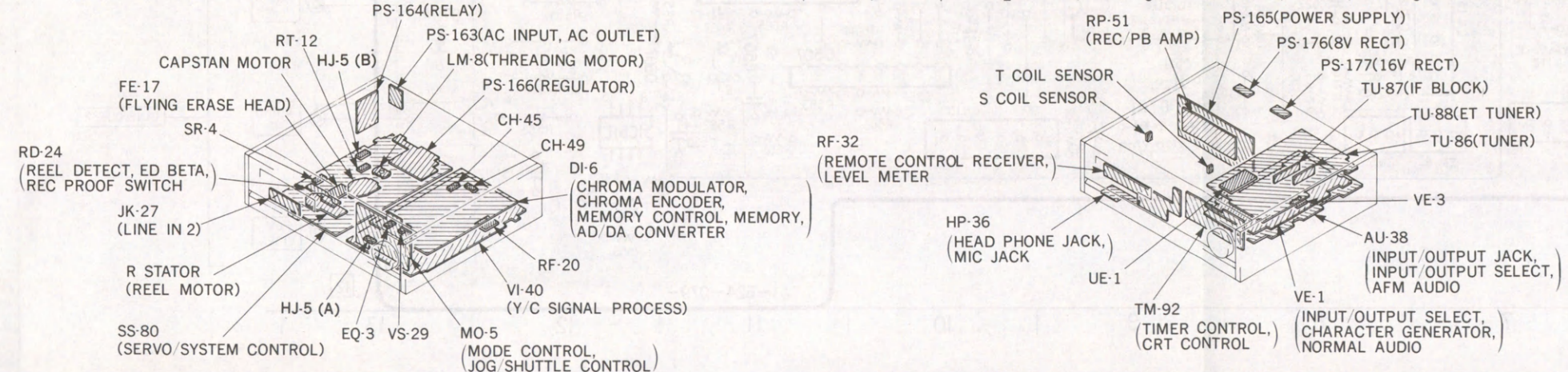
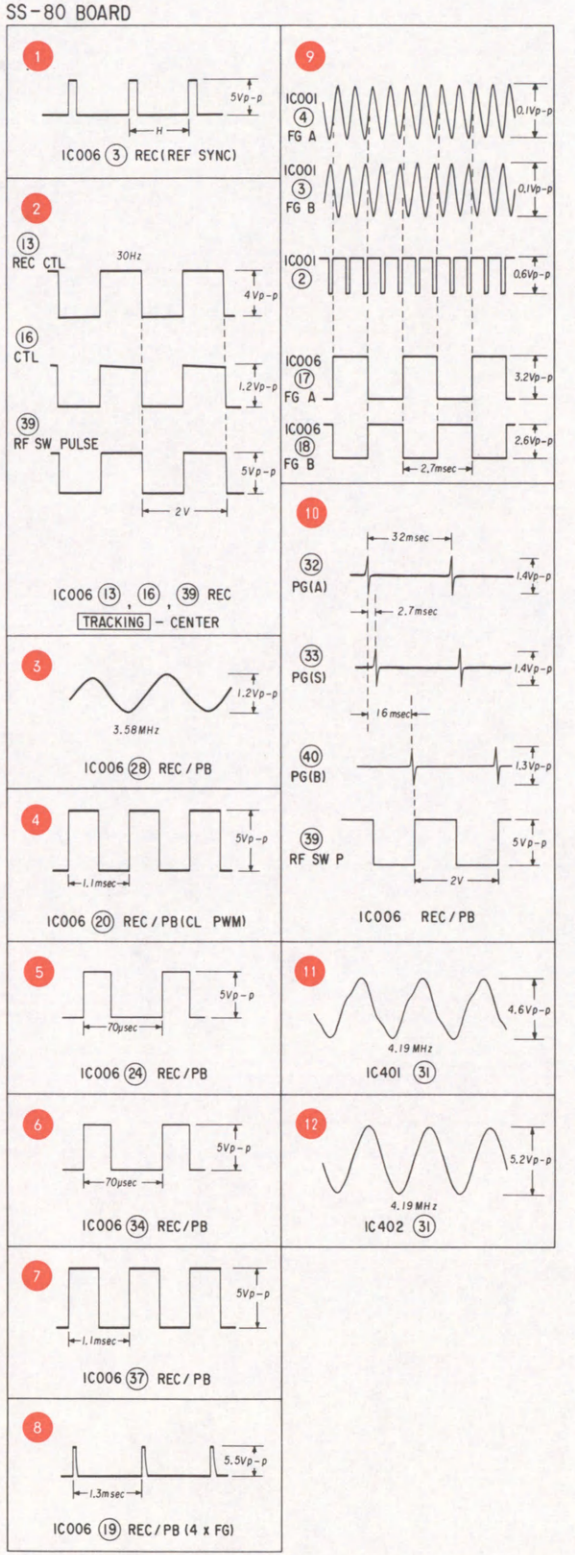
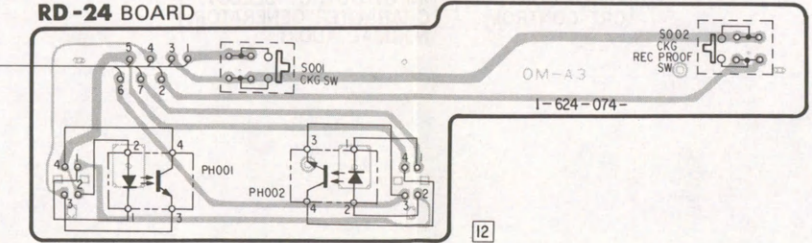
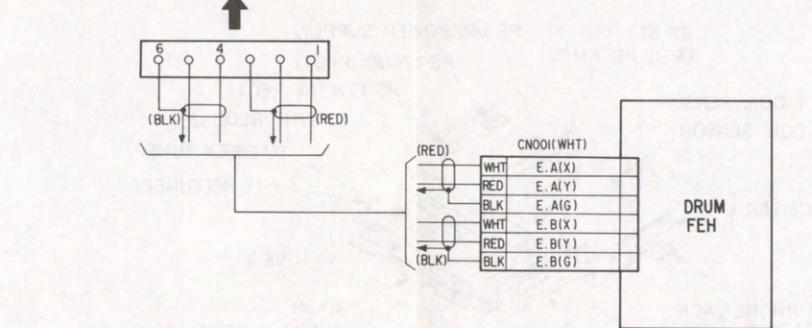
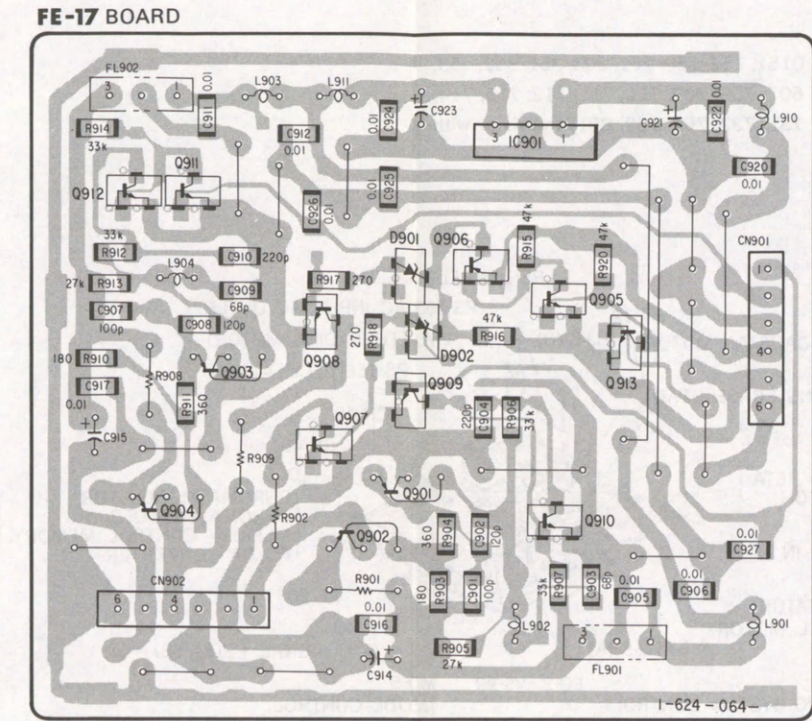
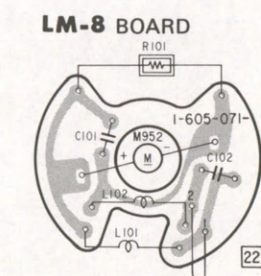
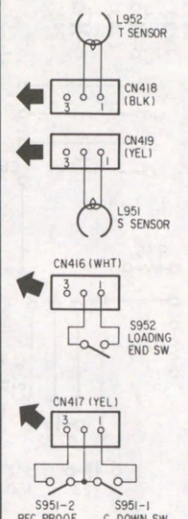
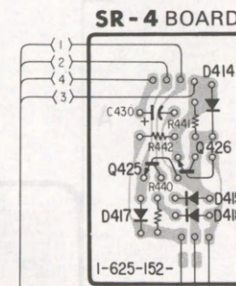
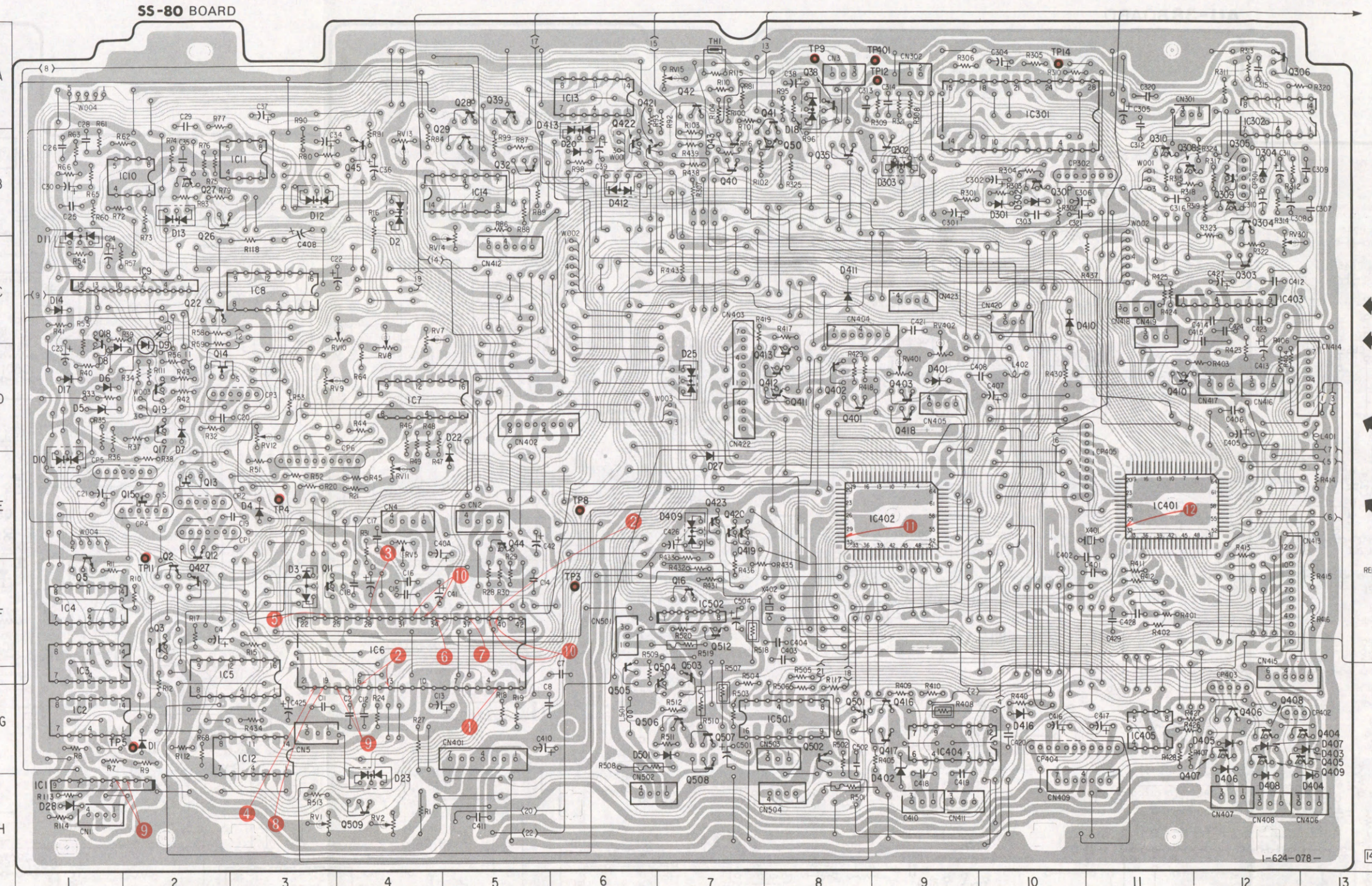
TU-86 BOARD IC552

- Signal path
- REC Y/CHROMA Signal
 - PB Y/CHROMA Signal
 - REC AUDIO Signal
 - PB AUDIO Signal

TU-86 BOARD



CN1	H-1	D405	G-12	Q302	B-9
CN2	E-5	D406	G-12	Q303	C-12
CN3	A-8	Q304	B-12	Q304	B-12
CN4	E-4	D408	G-12	Q305	B-12
CN5	G-3	D409	E-7	Q306	A-12
CN301	A-12	D410	C-10	Q308	B-11
CN302	A-9	D411	C-8	Q309	B-11
CN401	G-5	D412	B-6	Q401	D-8
CN402	D-5	D413	B-6	Q402	D-9
CN403	D-7	D416	G-10	Q403	D-9
CN404	C-8	D501	G-7	Q404	G-13
CN405	D-9			Q405	G-13
CN406	H-13	IC1	H-1	Q406	G-12
CN407	H-12	IC2	G-12	Q407	G-12
CN408	H-12	IC3	F-1	Q408	G-12
CN409	H-10	IC4	F-1	Q409	G-12
CN410	H-9	IC5	G-3	Q410	D-11
CN411	H-9	IC6	F-4	Q411	D-8
CN412	C-5	IC7	D-4	Q412	D-8
CN413	F-12	IC8	C-3	Q413	D-8
CN414	D-13	IC9	C-2	Q416	G-9
CN415	G-12	IC10	B-2	Q417	D-9
CN416	D-12	IC11	B-3	Q418	D-9
CN417	D-12	IC12	G-3	Q419	E-7
CN418	C-11	IC13	A-6	Q420	E-7
CN419	C-11	IC14	B-5	Q421	B-6
CN420	C-10	IC301	A-10	Q422	B-6
CN422	D-7	IC302	A-12	Q427	F-2
CN423	C-9	IC401	E-11	Q501	G-8
CN501	F-6	IC402	E-9	Q502	G-8
CN502	H-6	IC403	C-13	Q503	G-7
CN503	G-8	IC404	G-9	Q504	G-7
CN504	H-8	IC405	G-11	Q505	G-6
		IC501	G-8	Q506	G-7
		IC502	F-7	Q507	G-7
				Q508	G-7
				Q509	H-4
				Q512	F-7
D1	G-2	Q2	F-2	RV1	H-3
D2	B-4	Q3	F-2	RV2	H-4
D3	F-3	Q5	F-1	RV3	E-4
D4	E-3	Q6	F-1	RV4	C-4
D5	D-1	Q11	F-3	RV5	D-4
D6	D-1	Q12	E-2	RV6	D-4
D7	D-2	Q13	E-2	RV7	C-4
D8	D-1	Q14	D-2	RV8	D-4
D9	E-1	Q15	E-2	RV9	D-3
D10	E-1	Q16	F-7	RV10	D-3
D11	C-1	Q17	D-2	RV11	E-4
D12	B-3	Q18	D-1	RV12	D-3
D13	B-2	Q19	D-2	RV13	B-4
D14	C-1	Q22	C-2	RV14	C-5
D17	D-1	Q26	B-2	RV15	A-7
D18	A-8	Q27	B-2	RV301	C-12
D20	B-6	Q28	A-5	RV401	D-9
D22	E-5	Q29	B-5	RV402	D-9
D23	H-4	Q32	B-5		
D25	D-7	Q35	B-8		
D26	B-8	Q38	A-8		
D27	E-7	Q39	A-5		
D301	B-10	Q40	B-7		
D302	B-10	Q41	A-8		
D303	B-9	Q42	A-7		
D304	B-12	Q43	B-7		
D401	D-9	Q44	E-5		
D402	G-9	Q45	B-4		
D403	G-13	Q46	B-4		
D404	H-13	Q301	B-10		

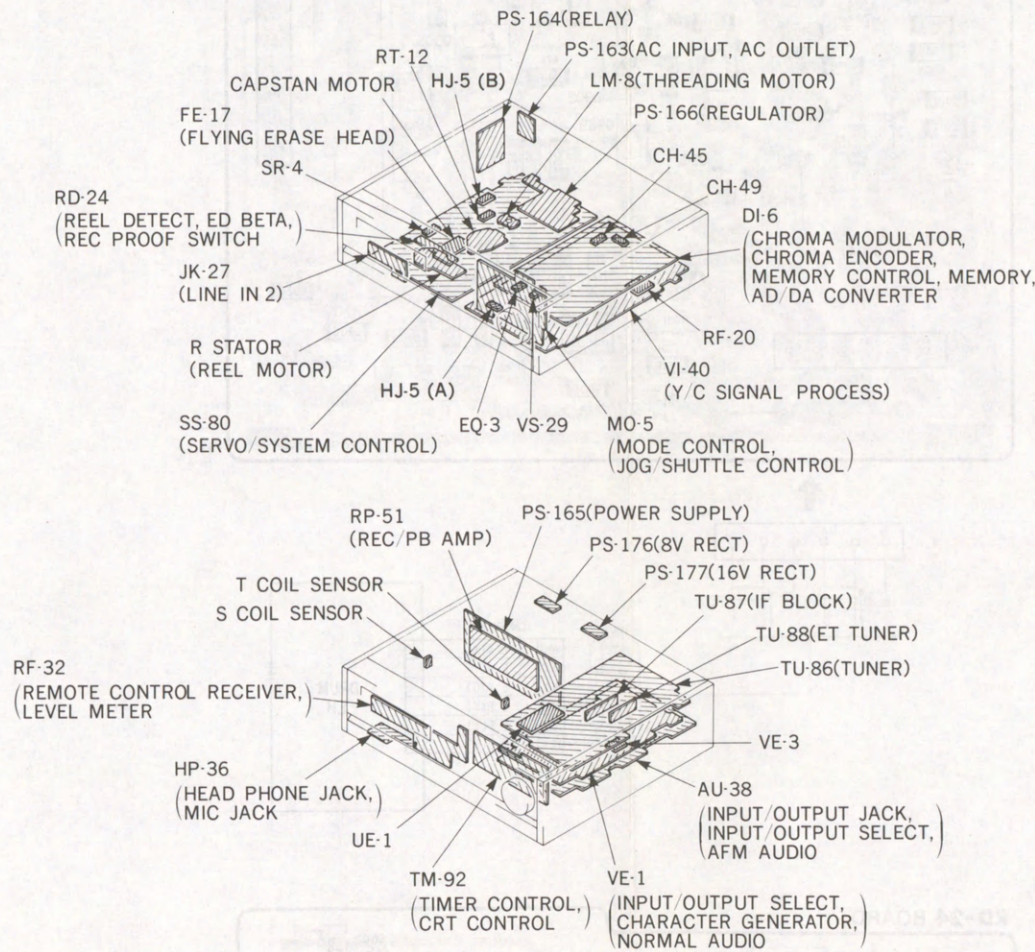


SYSTEM CONTROL

SYSTEM CONTROL

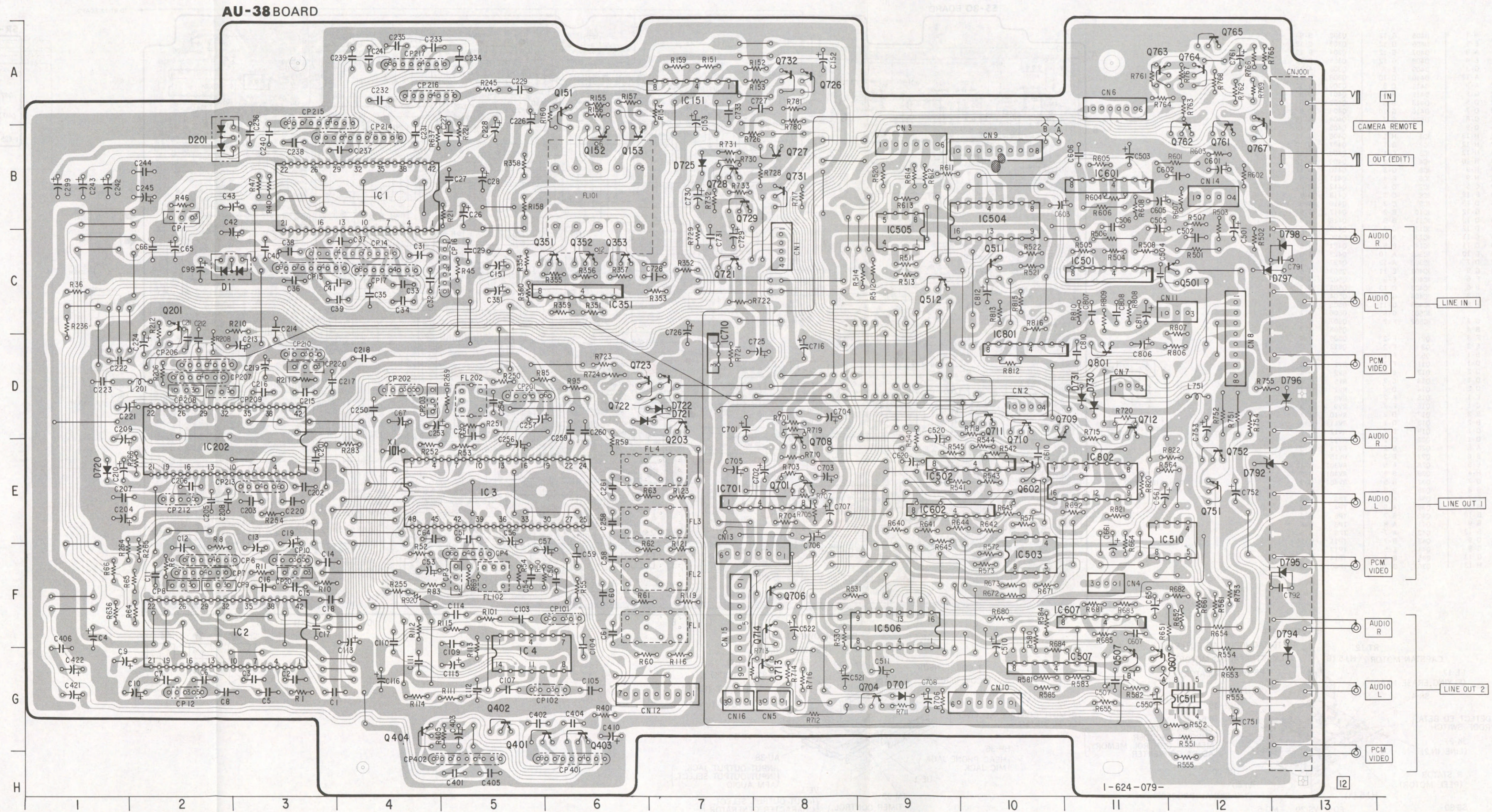
- Digital transistor (SS-80: Q002, 003, 005, 011, 026, 027, 028, 029, 032, 035, 038, 039, 040, 041, 042, 045, 302, 303, 304, 305, 306, 309, 401, 402, 403, 410, 411, 412, 413, 416, 417, 418, 419, 421, 422, 427, 501, 503, 504, 509, 647 FE-17: Q905, 906, 909, 910, 911, 912, 913, SR-4: Q425, 426) transistor with resistor.

• Digital transistor (AU-38: Q151, 152, 153, 201, 203, 351, 352, 353, 501, 507, 511, 512, 602, 607, 706, 709, 710, 711, 712, 713, 714, 721, 723, 726, 727, 728, 731, 732, 761, 762, 801) transistor with resistor.



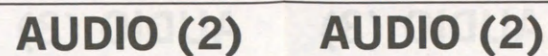
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CN2	D-10	Q152	B-6
CN3	B-9	Q153	B-6
CN4	F-11	Q201	C-2
CN5	G-8	Q203	D-7
CN6	A-11	Q351	C-6
CN7	D-11	Q352	C-6
CN8	C-12	Q353	C-6
CN9	B-10	Q401	G-5
CN10	G-10	Q402	G-5
CN11	C-12	Q403	G-6
CN12	G-7	Q404	G-4
CN13	F-8	Q501	C-12
CN14	B-12	Q507	G-11
CN15	F-7	Q511	C-10
CN16	G-7	Q512	C-9
D1	C-2	Q602	E-10
D201	B-2	Q607	G-11
D701	G-9	Q701	E-8
D720	E-1	Q704	G-9
D721	D-6	Q706	F-8
D722	D-7	Q708	E-8
D723	D-7	Q709	D-10
D724	B-7	Q710	D-10
D725	B-7	Q711	D-10
D726	D-11	Q712	D-11
D727	D-11	Q713	G-8
D728	E-13	Q714	F-8
D729	G-13	Q721	C-7
D730	F-13	Q723	D-6
D731	D-13	Q726	A-8
D732	C-13	Q727	B-8
D733	C-13	Q728	B-7
D734	C-13	Q729	B-7
D735	C-13	Q731	B-8
D736	C-13	Q732	A-8
D737	C-13	Q735	E-12
D738	C-13	Q751	E-12
D739	C-13	Q752	E-12
D740	C-13	Q761	B-12
D741	C-13	Q762	B-12
D742	C-13	Q763	A-11
D743	C-13	Q764	A-12
D744	C-13	Q765	A-12
D745	C-13	Q767	B-12
D746	C-13	Q801	D-11
D747	C-13		
D748	C-13		
D749	C-13		
D750	C-13		
D751	C-13		
D752	C-13		
D753	C-13		
D754	C-13		
D755	C-13		
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D922	C-13		
D923	C-13		
D924	C-13		
D925	C-13		
D926	C-13		
D927	C-13		
D928	C-13		
D929	C-13		
D930	C-13		
D931	C-13		
D932	C-13		
D933	C-13		
D934	C-13		
D935	C-13		
D936	C-13		
D937	C-13		
D938	C-13		
D939	C-13		
D940	C-13		
D941	C-13		
D942	C-13		
D943	C-13		
D944	C-13		
D945	C-13		
D946	C-13		
D947	C-13		
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D949	C-13		
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D973	C-13		
D974	C-13		
D975	C-13		
D976	C-13		
D977	C-13		
D978	C-13		
D979	C-13		
D980	C-13		
D981	C-13		
D982	C-13		
D983	C-13		
D984	C-13		
D985	C-13		
D986	C-13		
D987	C-13		
D988	C-13		
D989	C-13		
D990	C-13		
D991	C-13		
D992	C-13		
D993	C-13		
D994	C-13		
D995	C-13		
D996	C-13		
D997	C-13		
D998	C-13		
D999	C-13		
D1000	C-13		

AU-38 (I/O JACK, I/O SELECT) PRINTED WIRING BOARD
—Ref. No. AU-38 BOARD: 8,000 series—

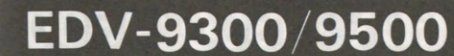




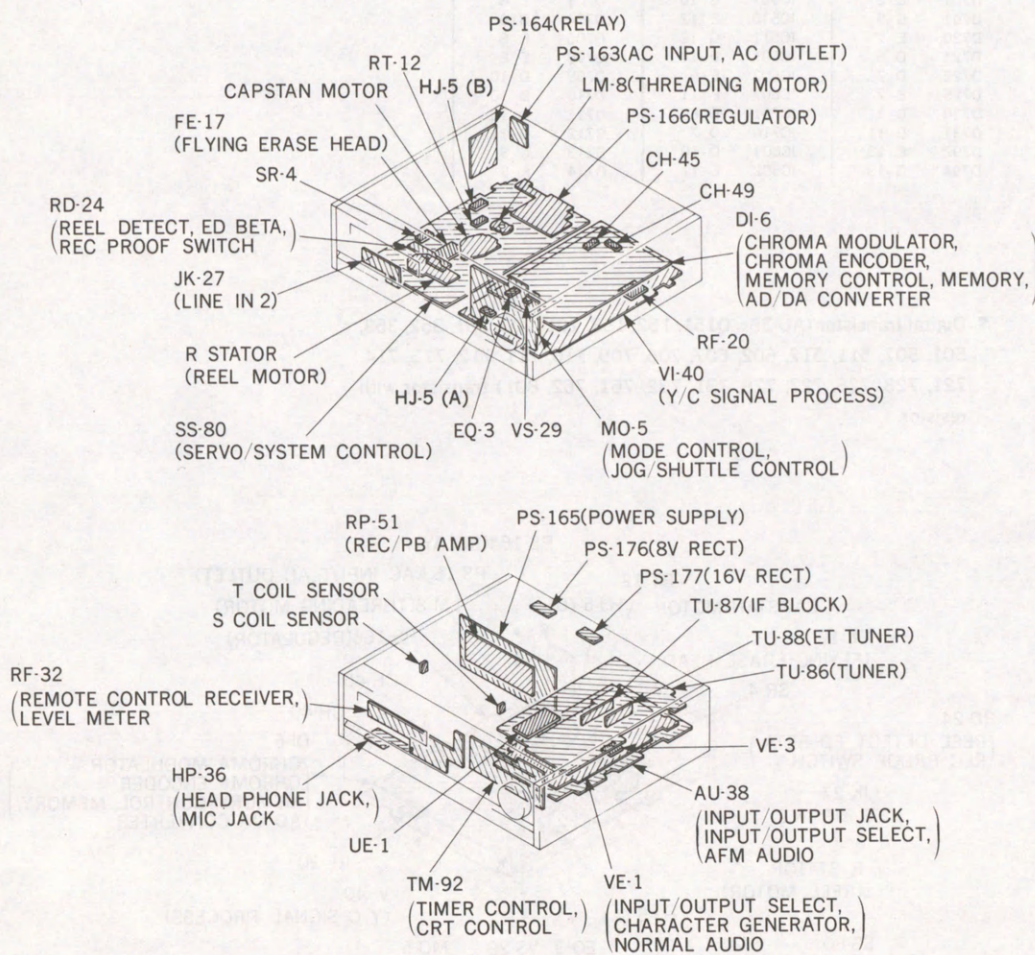
—171—



- Digital transistor (AU-38: Q151, 152, 153, 201, 203, 351, 352, 353, 501, 507, 511, 512, 602, 607, 706, 709, 710, 711, 712, 713, 714, 721, 723, 726, 727, 728, 731, 732, 761, 762, 801) transistor with resistor.

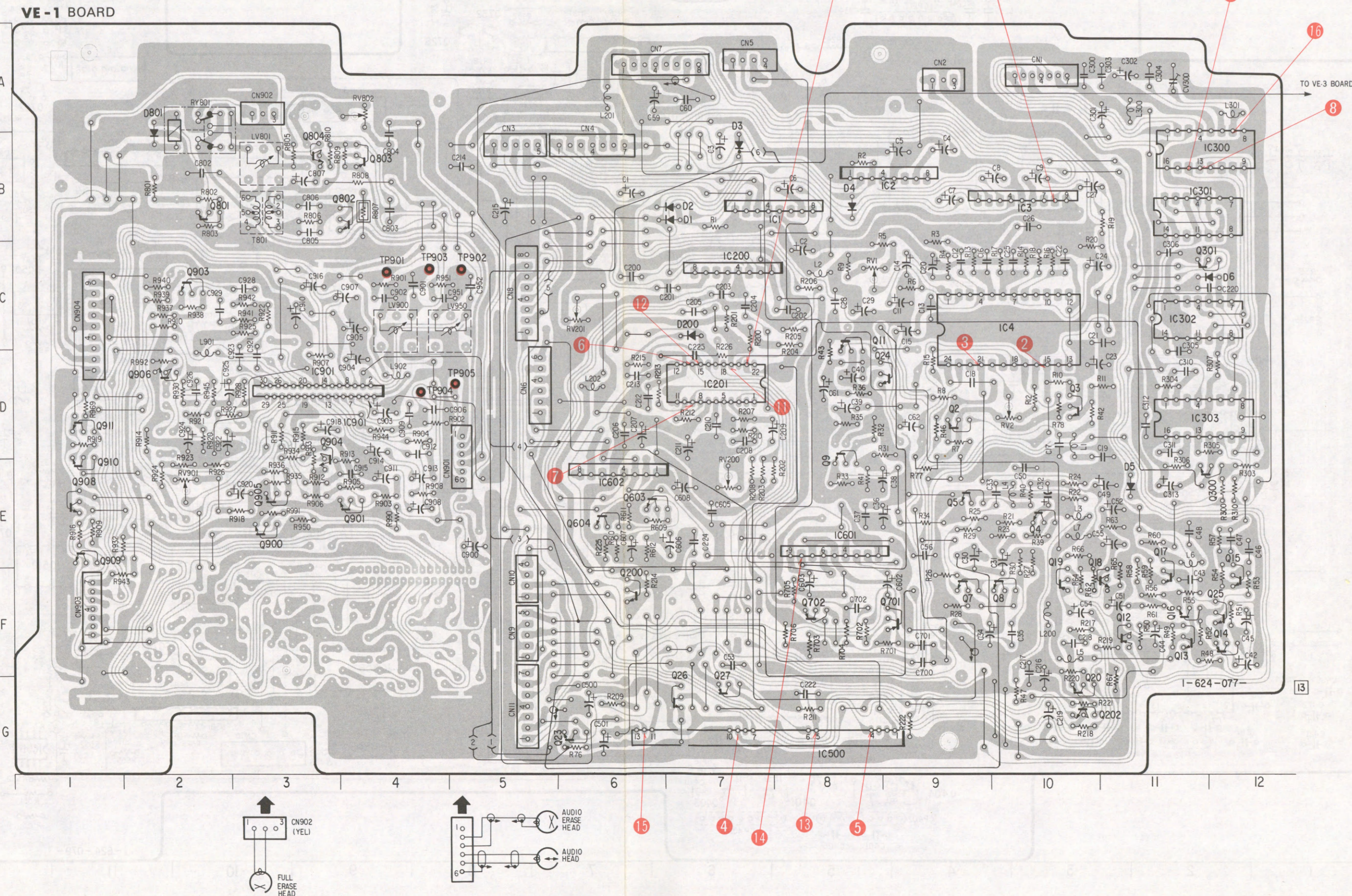


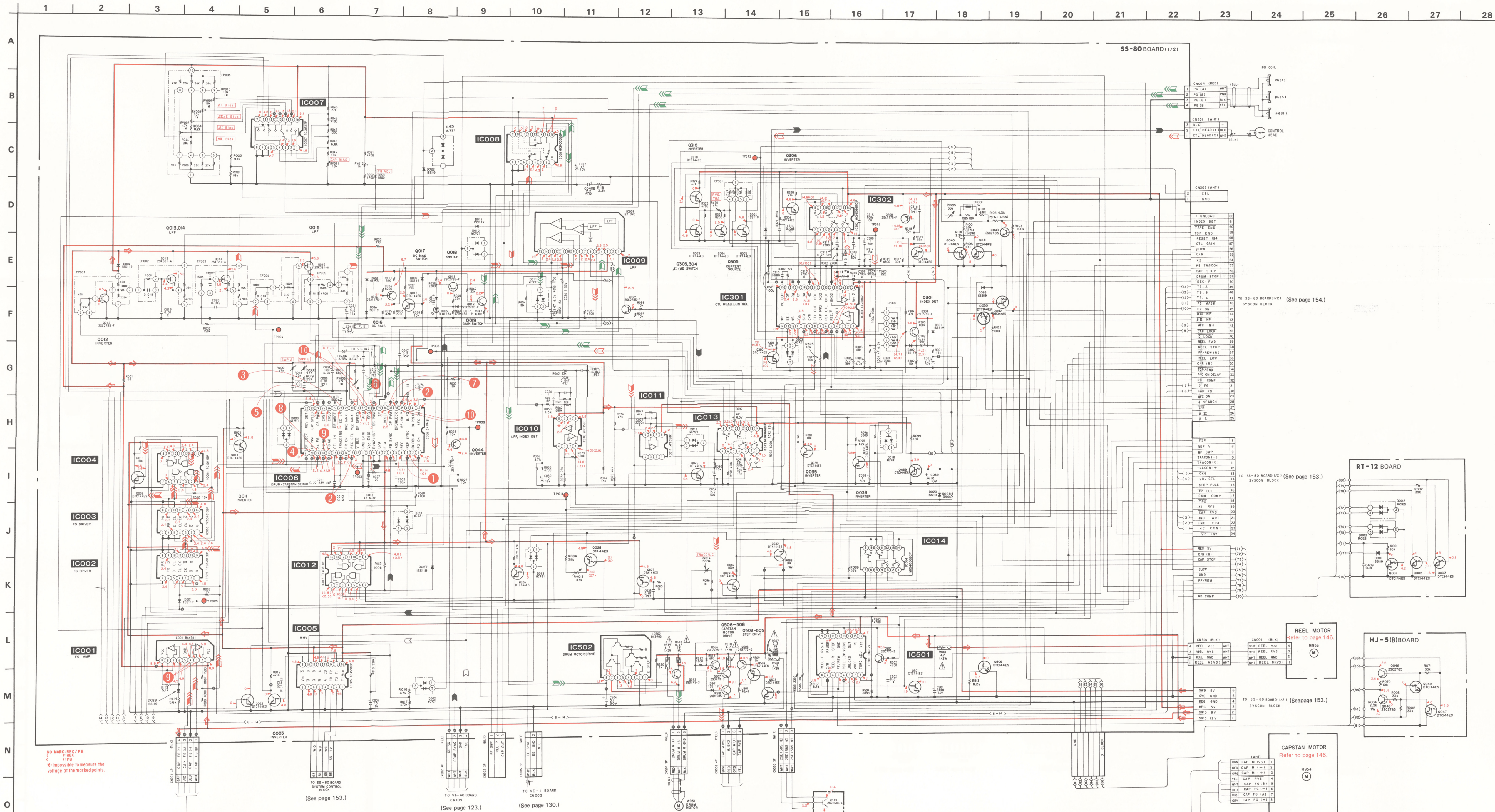
• Digital transistor (VE-1 : Q023, 025, 026, 027, 301, 702, 804, 900, 906, 908, 909, 910, 911) transistor with resistor.



CN1	A-10	Q9	D-8
CN2	A-9	Q10	D-8
CN3	B-5	Q11	D-8
CN4	B-6	Q12	F-11
CN5	A-7	Q13	F-11
CN6	D-5	Q14	F-12
CN7	A-6	Q15	F-12
CN8	C-5	Q16	F-11
CN9	F-5	Q17	F-11
CN10	F-5	Q18	F-10
CN11	G-5	Q19	F-10
CN901	E-5	Q23	G-6
CN902	A-3	Q24	D-9
CN903	F-1	Q25	F-12
CN904	C-1	Q26	G-7
		Q27	G-7
CV300	A-11	Q200	F-6
		Q201	G-10
D1	B-7	Q202	G-10
D2	B-7	Q300	E-12
D3	B-7	Q301	C-12
D4	B-8	Q701	F-9
D5	E-11	Q702	F-8
D6	C-12	Q801	B-2
D200	C-7	Q802	B-4
D801	A-2	Q803	B-4
		Q804	B-3
IC1	B-8	Q900	E-3
IC2	B-9	Q901	E-4
IC3	B-10	Q902	C-2
IC4	C-10	Q903	C-2
IC200	C-7	Q904	E-3
IC201	D-7	Q905	E-3
IC300	B-11	Q906	D-2
IC301	B-11	Q908	E-1
IC302	C-11	Q909	E-1
IC303	D-11	Q910	E-1
IC500	G-8	Q911	D-1
IC601	E-8		
IC602	E-6	RV1	C-8
IC901	D-3	RV2	D-10
		RV200	E-7
LV801	B-3	RV201	C-6
LV950	C-4	RV802	A-4
		RV901	E-2
Q2	D-9	TP901	C-4
Q3	D-10	TP902	C-5
Q4	E-10	TP903	C-4
Q5	E-9	TP904	C-4
Q7	F-9	TP905	D-5
Q8	F-10		

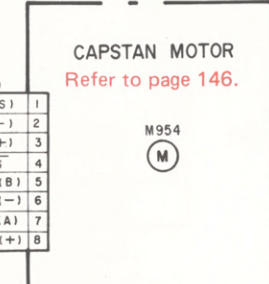
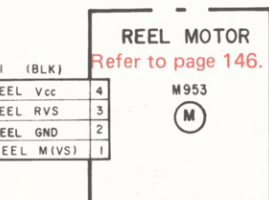
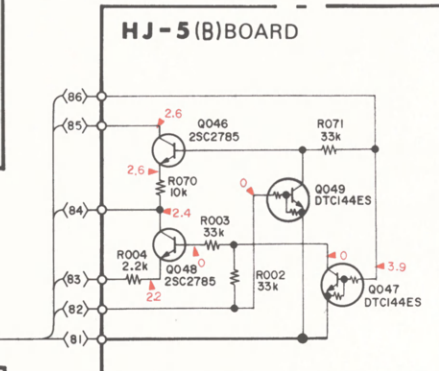
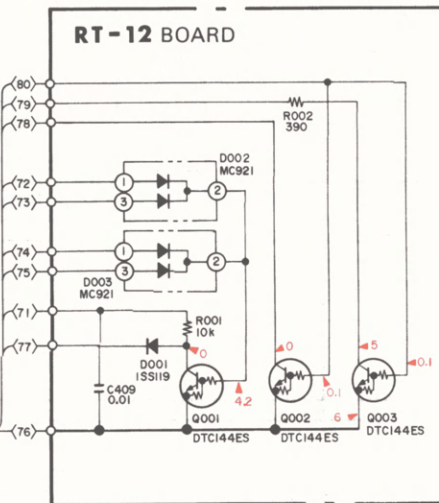
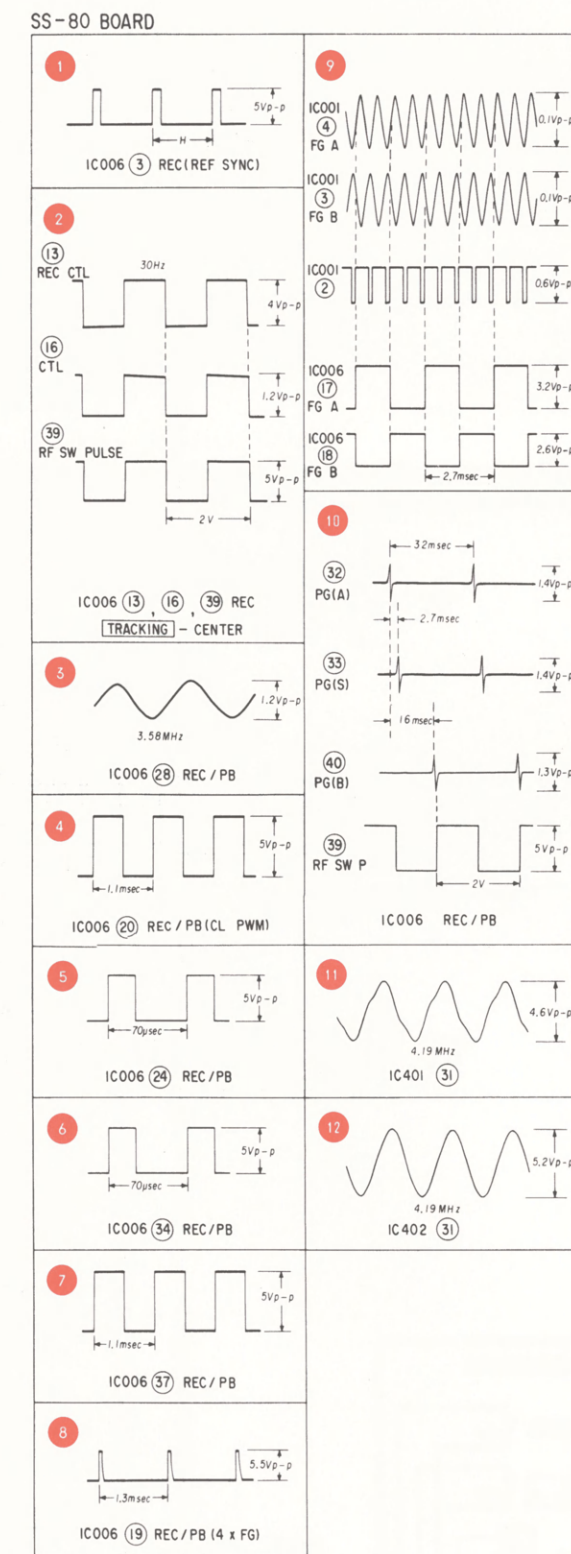
VE-1 (NORMAL AUDIO) PRINTED WIRING BOARD
—Ref. No. VE-1 BOARD: 5,000 series—

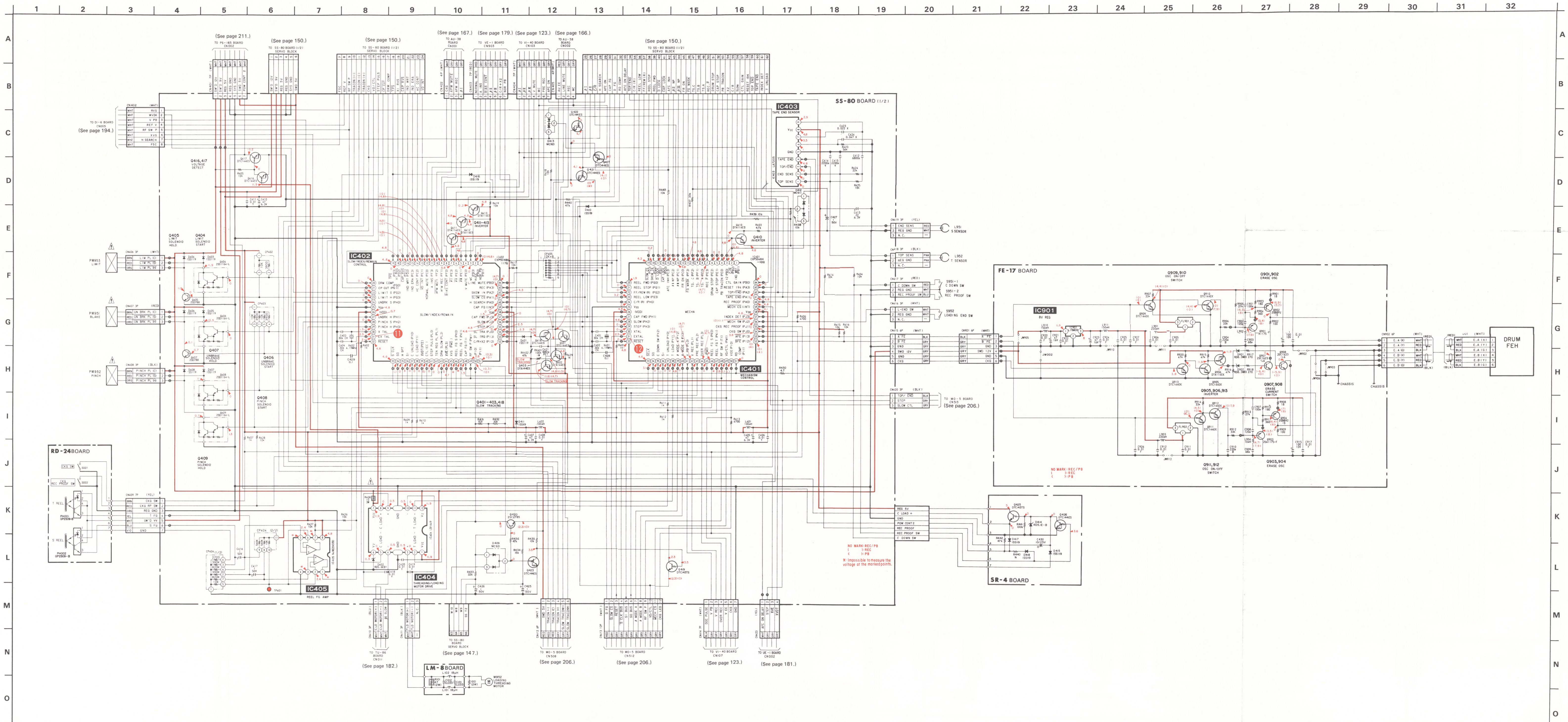




- Signal path

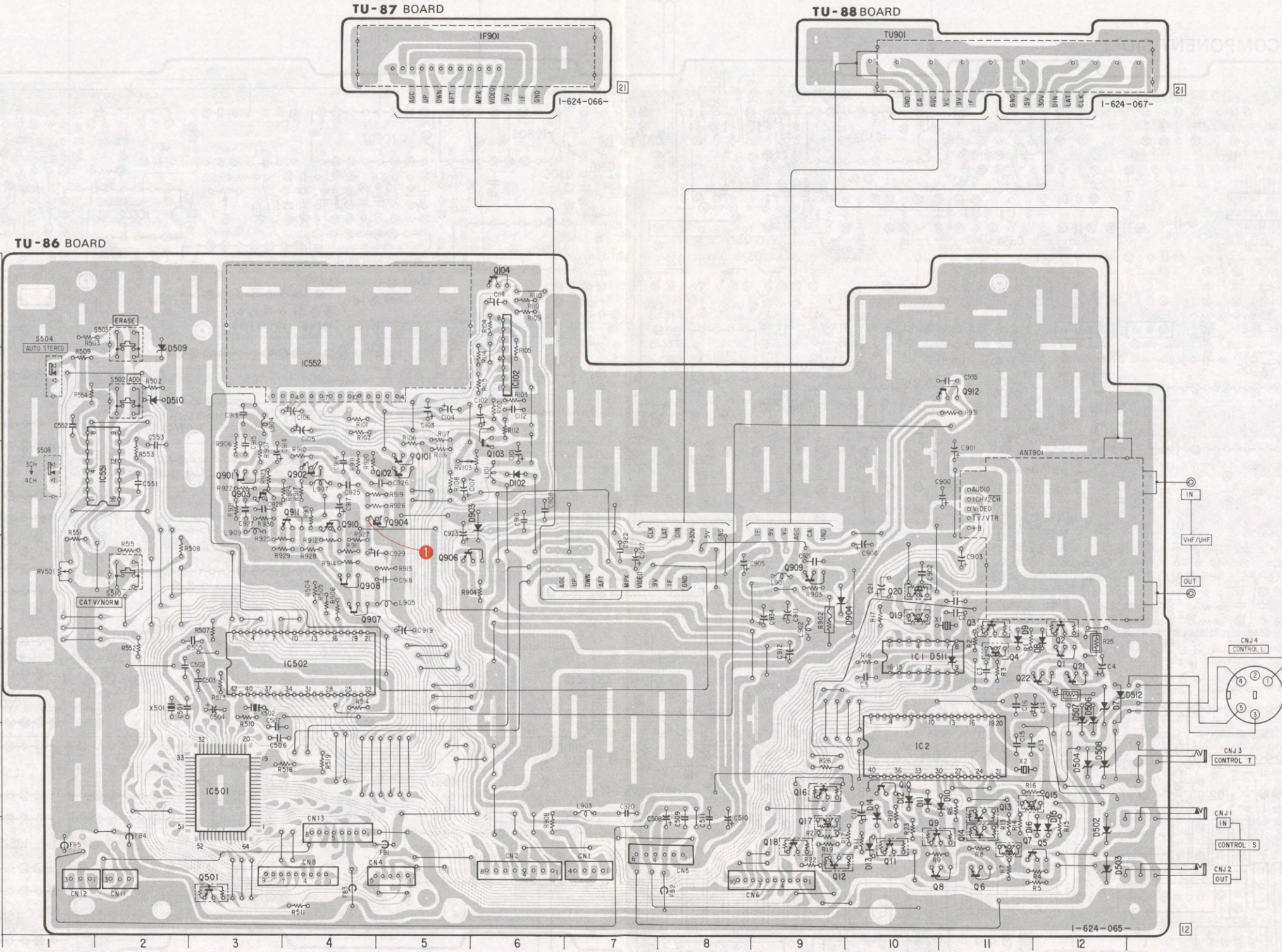
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			



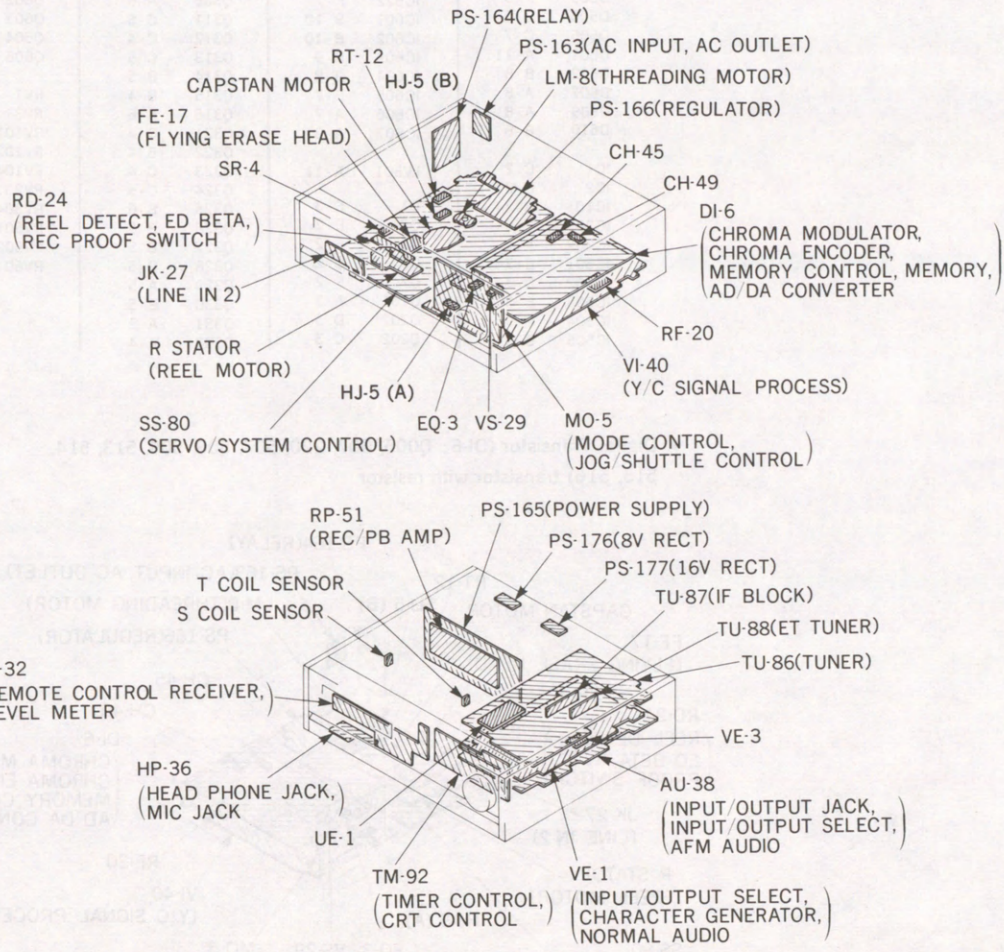


TU-86 (TUNER), TU-87 (IF BLOCK), TU-88 (ET TUNER), UE-1 (ENVELOPE DETECT) PRINTED WIRING BOARDS
—Ref. No. TU-86 BOARD: 9,000 series, UE-1 BOARD: 1,000 series—

CN1	G-7	Q1	E-12
CN2	G-6	Q2	D-12
CN4	G-5	Q3	D-11
CN5	G-8	Q4	E-11
CN6	G-9	Q5	G-12
CN8	G-4	Q6	G-11
CN11	G-2	Q7	G-11
CN12	G-1	Q8	G-10
CN13	G-4	Q9	G-10
		Q10	F-10
D7	E-12	Q11	G-10
D8	E-12	Q12	G-9
D9	E-11	Q13	F-11
D10	F-11	Q14	G-11
D11	F-10	Q15	F-12
D12	F-10	Q16	F-9
D13	G-10	Q17	G-9
D14	F-10	Q18	G-9
D15	G-12	Q19	D-10
D16	G-12	Q20	D-10
D102	C-6	Q21	E-12
D502	G-12	Q22	E-12
D503	G-12	Q101	C-5
D504	F-12	Q102	C-5
D506	E-12	Q103	B-6
D507	E-12	Q104	A-6
D508	F-12	Q501	G-3
D509	A-2	Q901	C-3
D510	B-2	Q902	C-4
D511	E-11	Q903	C-3
D512	E-12	Q904	C-5
D903	C-6	Q906	D-5
D904	D-9	Q907	D-4
		Q908	D-4
IC1	E-10	Q909	D-9
IC2	F-10	Q910	C-4
IC102	B-6	Q911	C-4
IC501	F-3	Q912	B-11
IC502	E-4		
IC551	C-2	RV103	C-5
		RV501	D-1

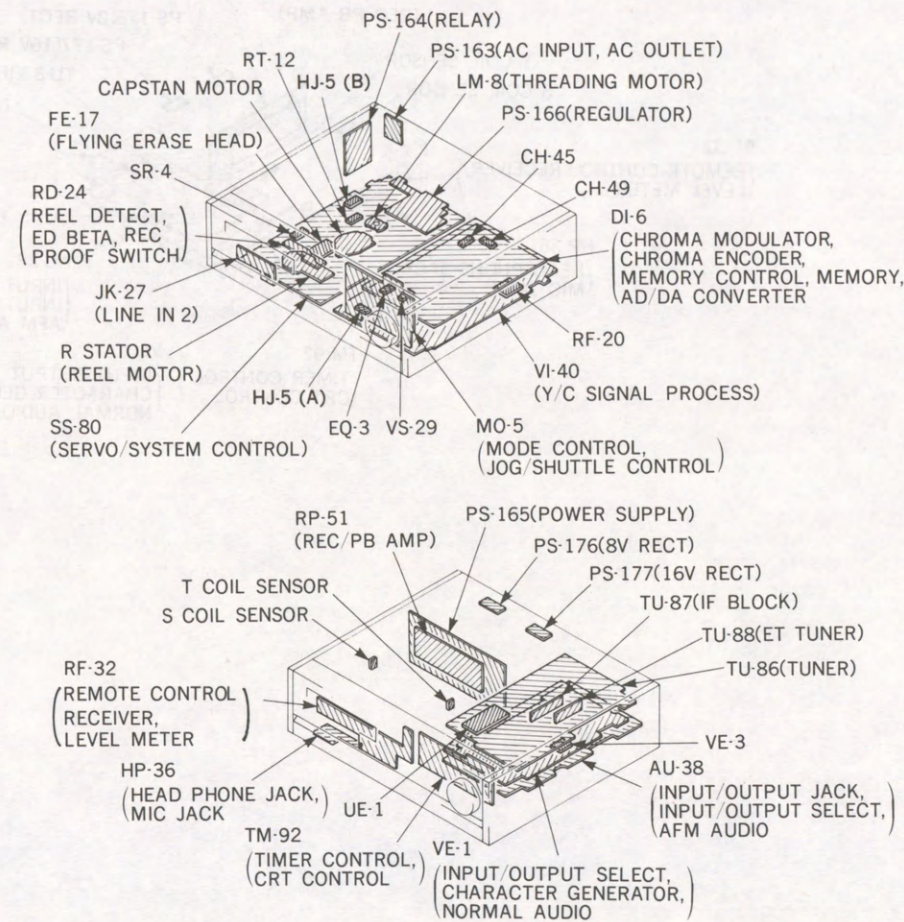


• Digital transistor (UE-1: Q004, 005, 007, 008, 009, 010, 011)
transistor with resistor.



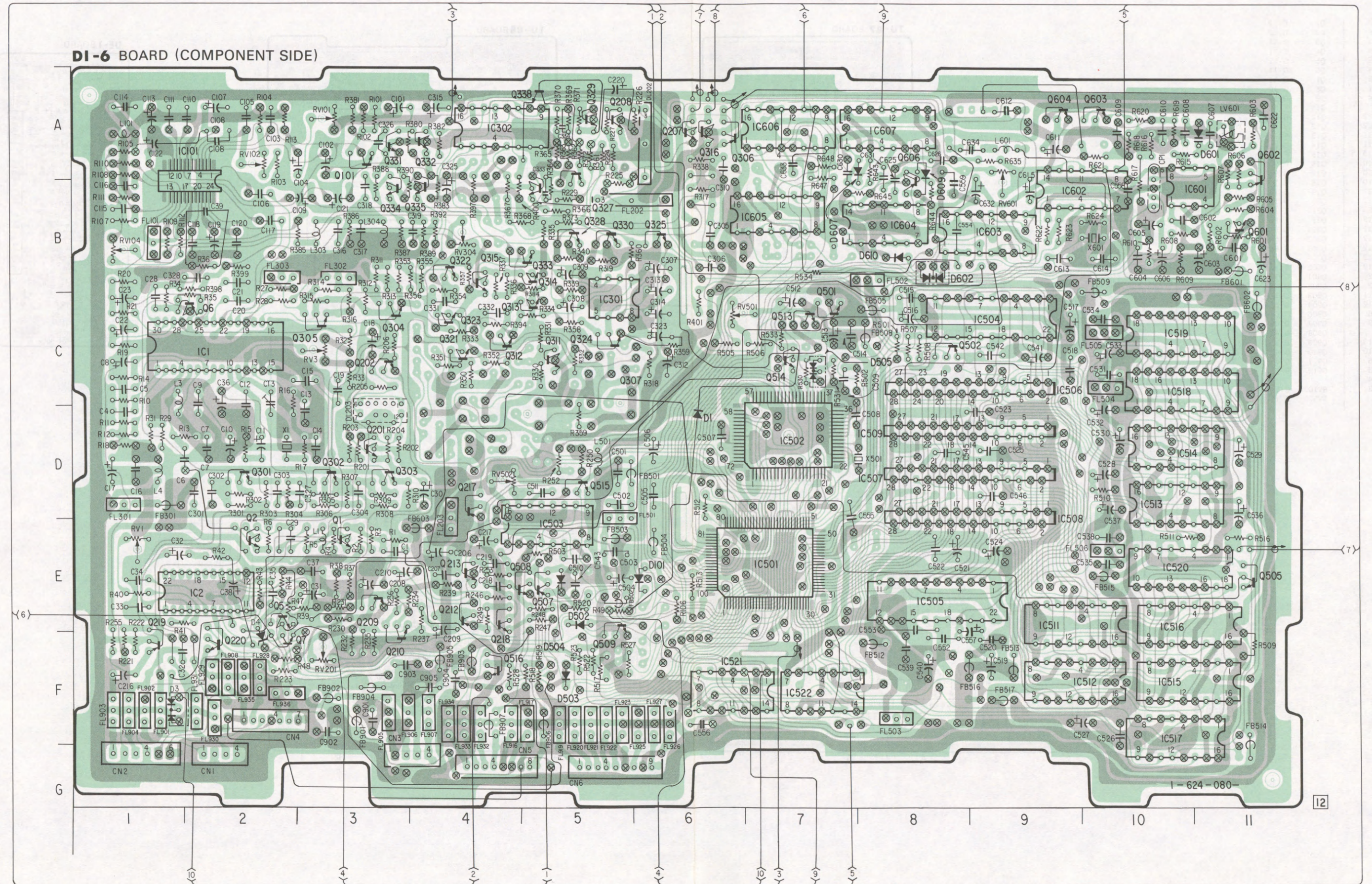
CN1	G-2	IC506	C-9	Q207	A-6	Q333	B-5
CN2	G-1	IC507	D-9	Q208	A-5	Q334	B-3
CN3	G-4	IC508	E-9	Q209	E-3	Q335	B-4
CN4	F-2	IC509	D-9	Q210	E-3	Q338	A-5
CN5	G-4	IC511	E-9	Q212	E-4	Q501	C-7
CN6	G-5	IC512	F-9	Q213	E-4	Q502	C-8
CT3	D-2	IC513	D-10	Q217	D-4	Q505	E-11
CT601	A-7	IC514	D-10	Q218	E-4	Q507	E-5
		IC515	F-10	Q219	F-1	Q508	E-5
		IC516	E-10	Q220	F-2	Q509	F-5
D1	C-6	IC517	F-10	Q301	D-2	Q513	C-7
D3	F-1	IC518	C-10	Q302	D-3	Q514	C-7
D4	F-2	IC519	C-10	Q303	D-3	Q515	D-5
D101	E-6	IC520	E-10	Q304	C-3	Q516	F-4
D502	E-5	IC521	F-6	Q305	C-3	Q601	B-11
D503	F-5	IC522	F-7	Q306	A-6	Q602	A-11
D504	E-5	IC601	B-10	Q311	C-5	Q603	A-10
D505	C-7	IC602	B-10	Q312	C-4	Q604	A-9
D601	A-11	IC603	B-9	Q313	C-5	Q606	A-8
D602	B-8	IC604	B-8	Q314	B-5		
D607	A-8	IC605	B-7	Q315	B-4	RV1	E-1
D609	A-8	IC606	A-7	Q316	A-6	RV3	C-3
D610	B-8	IC607	A-8	Q321	C-4	RV101	A-3
				Q322	B-4	RV102	A-2
IC1	C-2	LV601	A-11	Q323	C-4	RV104	B-1
IC2	E-2			Q324	C-5	RV201	F-3
IC101	B-2	Q1	E-3	Q325	B-6	RV304	B-4
IC301	C-5	Q2	E-2	Q326	B-5	RV501	C-6
IC302	A-4	Q5	E-2	Q327	B-5	RV502	D-4
IC501	E-7	Q6	C-2	Q328	B-5	RV601	A-9
IC502	D-7	Q7	F-2	Q329	A-5		
IC503	E-5	Q101	A-3	Q330	B-5		
IC504	C-9	Q201	D-3	Q331	A-3		
IC505	E-8	Q202	C-3	Q332	A-4		

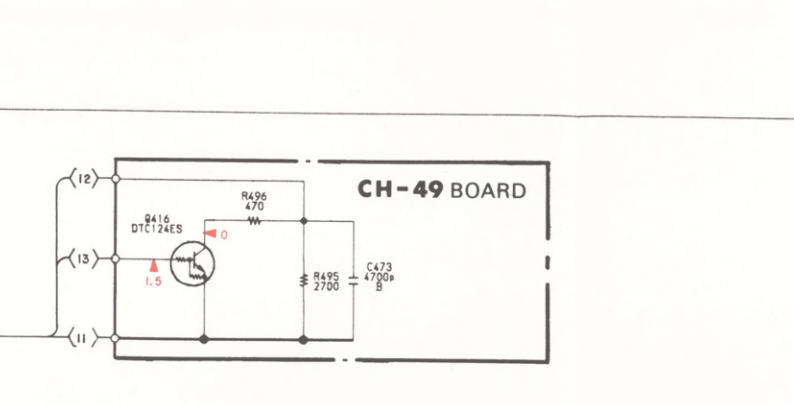
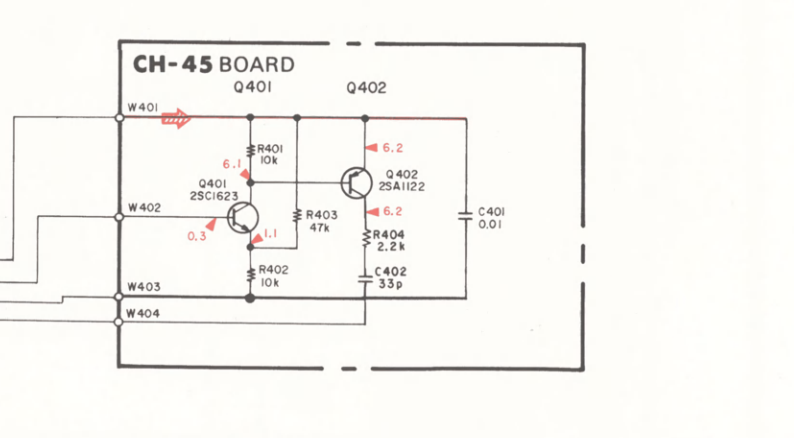
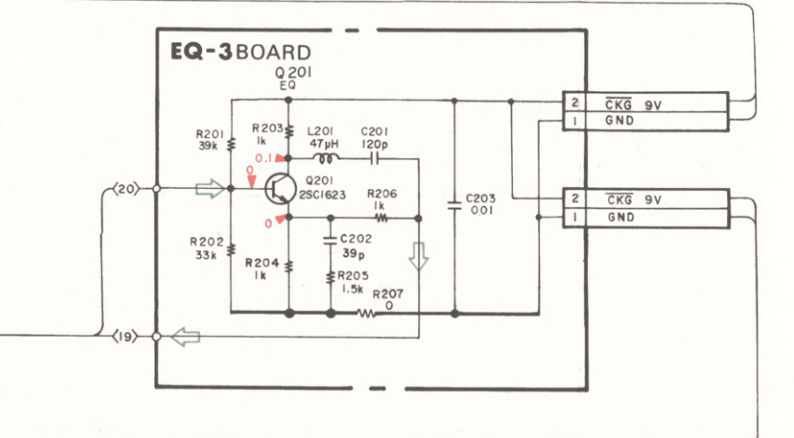
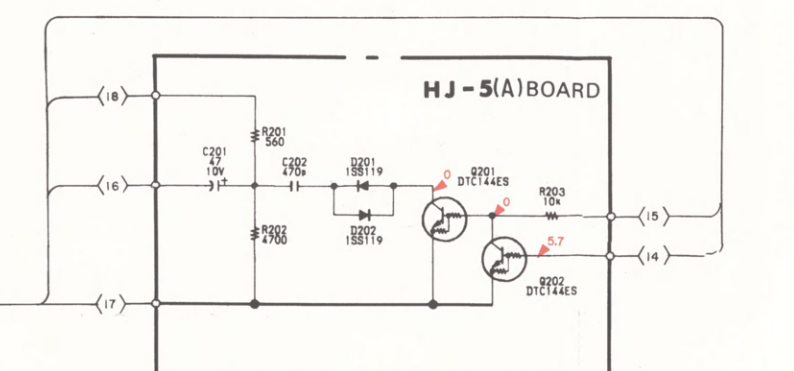
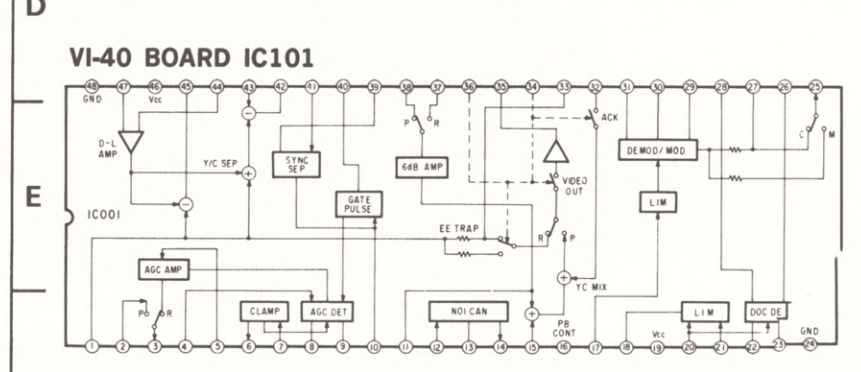
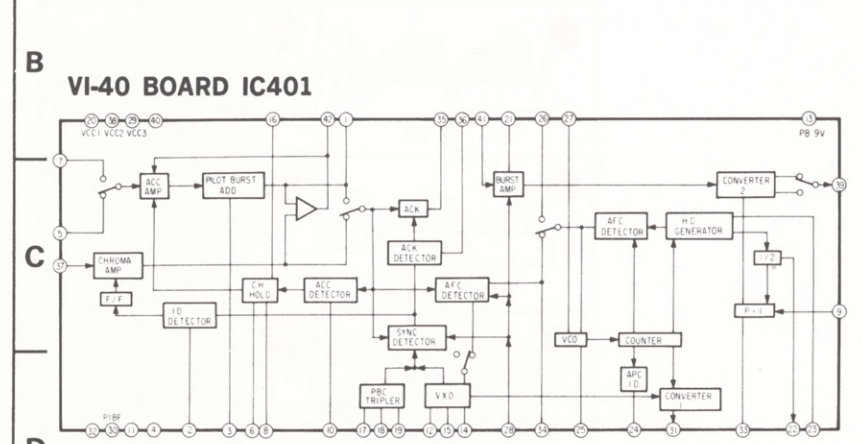
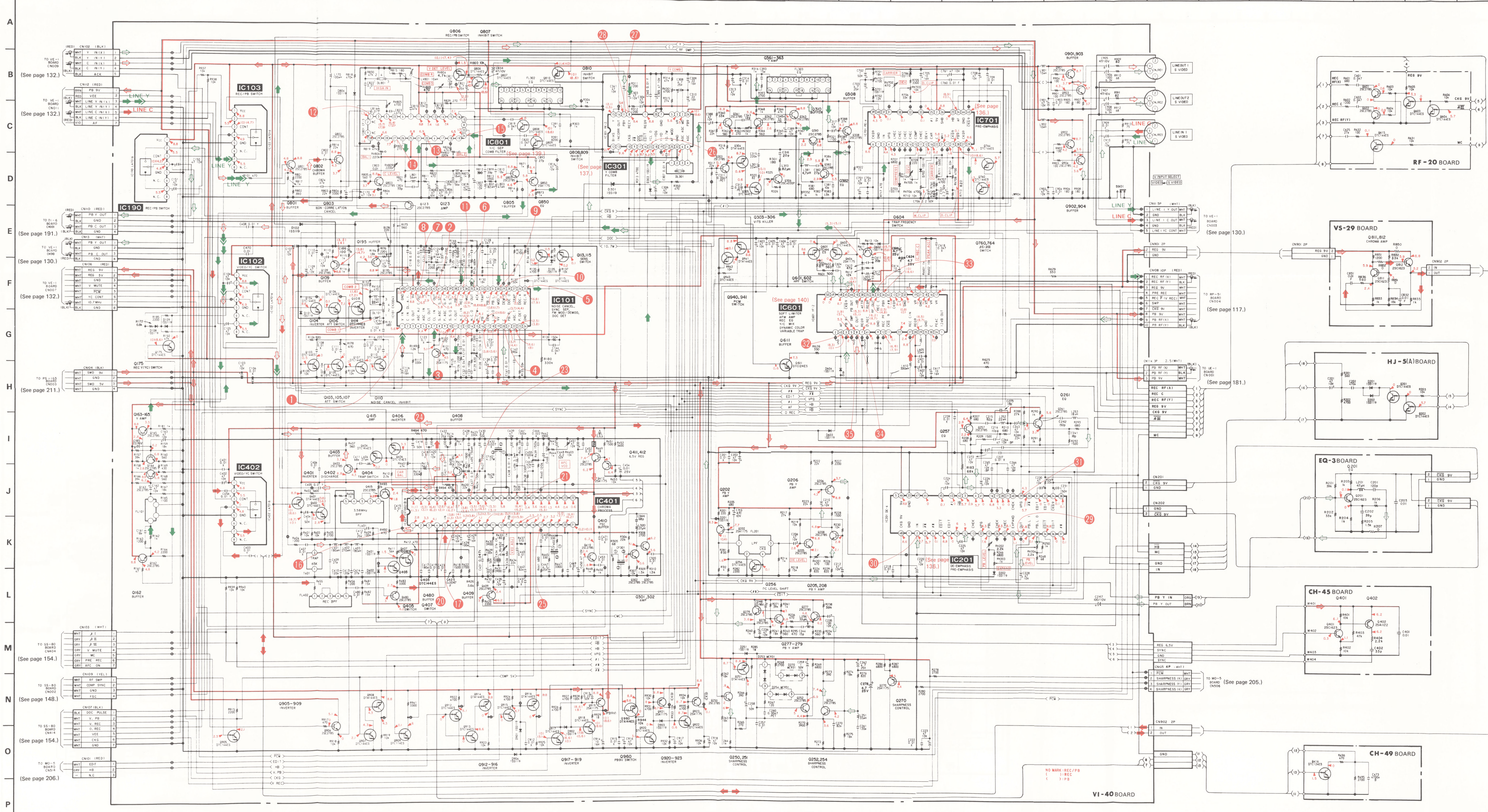
• Digital Transistor (DI-6: Q005, 007, 220, 507, 508, 509, 513, 514, 515, 516) transistor with resistor.

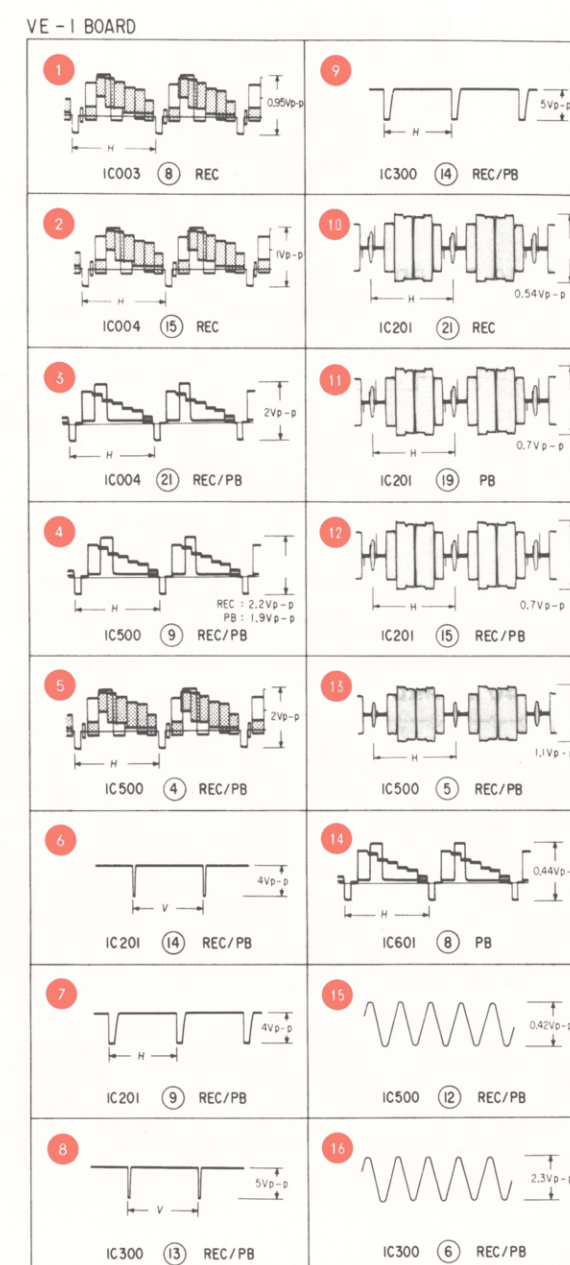


DI-6 (CHROMA DEMODULATOR, CHROMA ENCODER) PRINTED WIRING BOARD

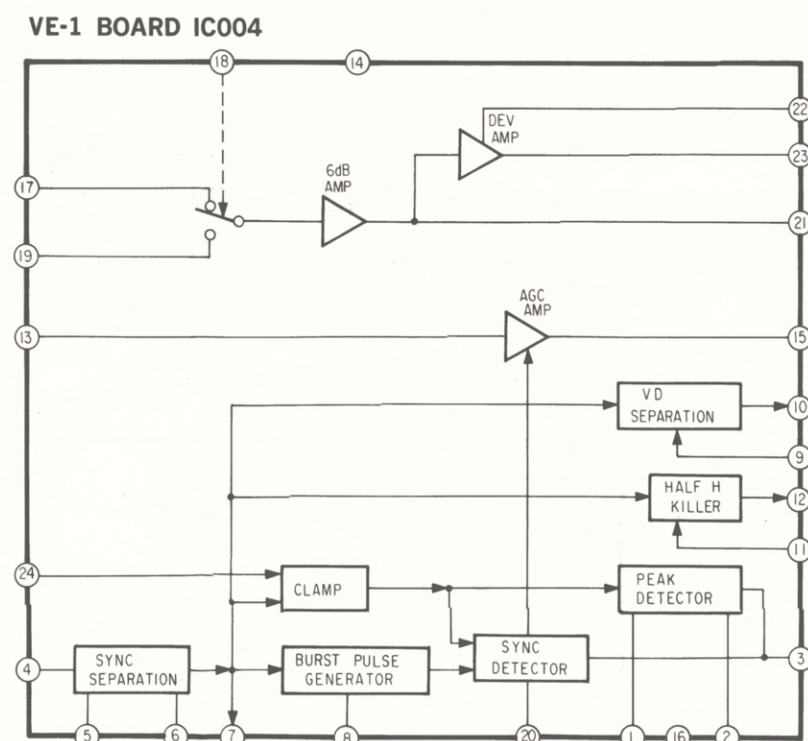
—Ref. No. DI-6 BOARD : 11,000 series—



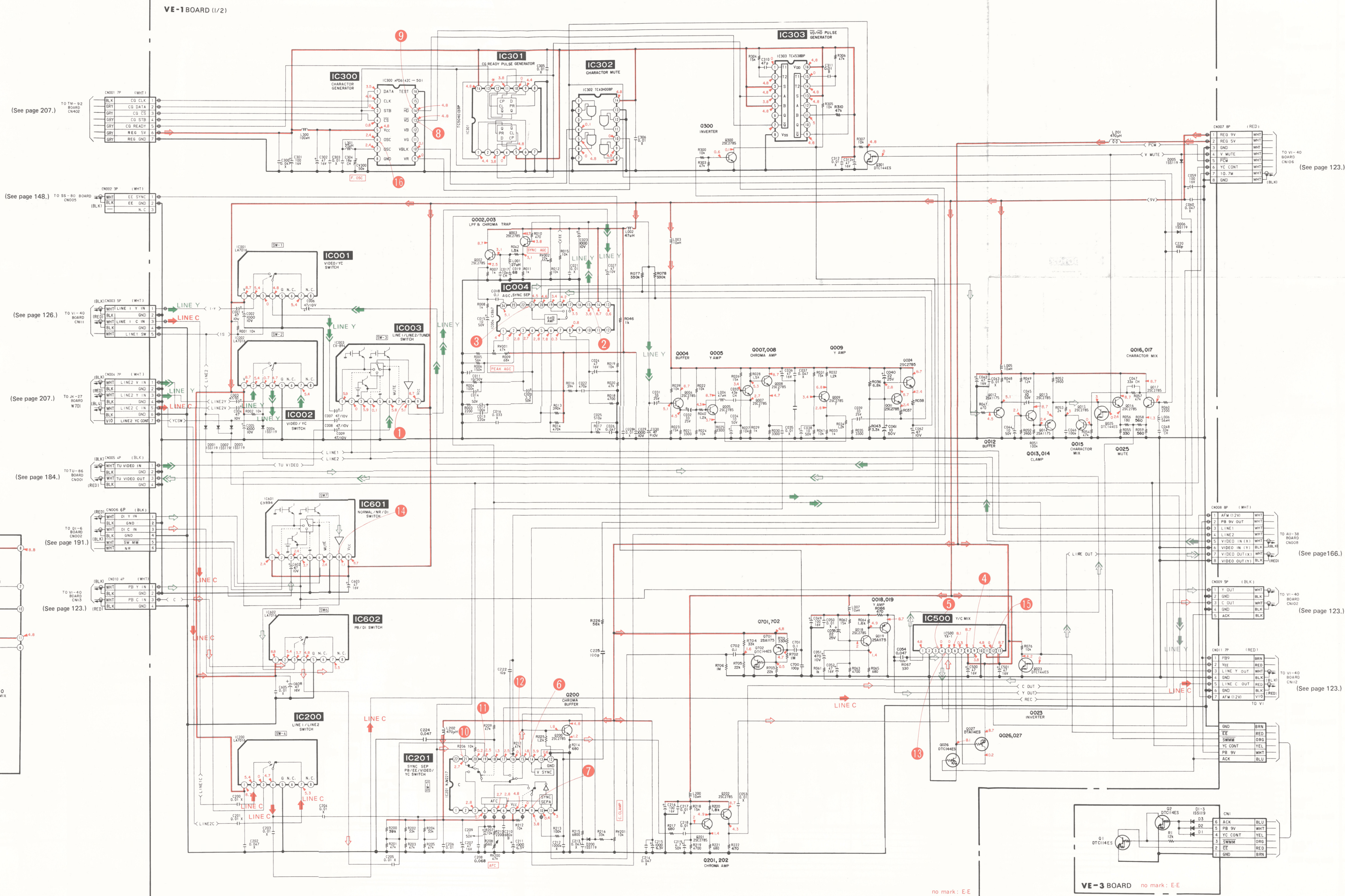
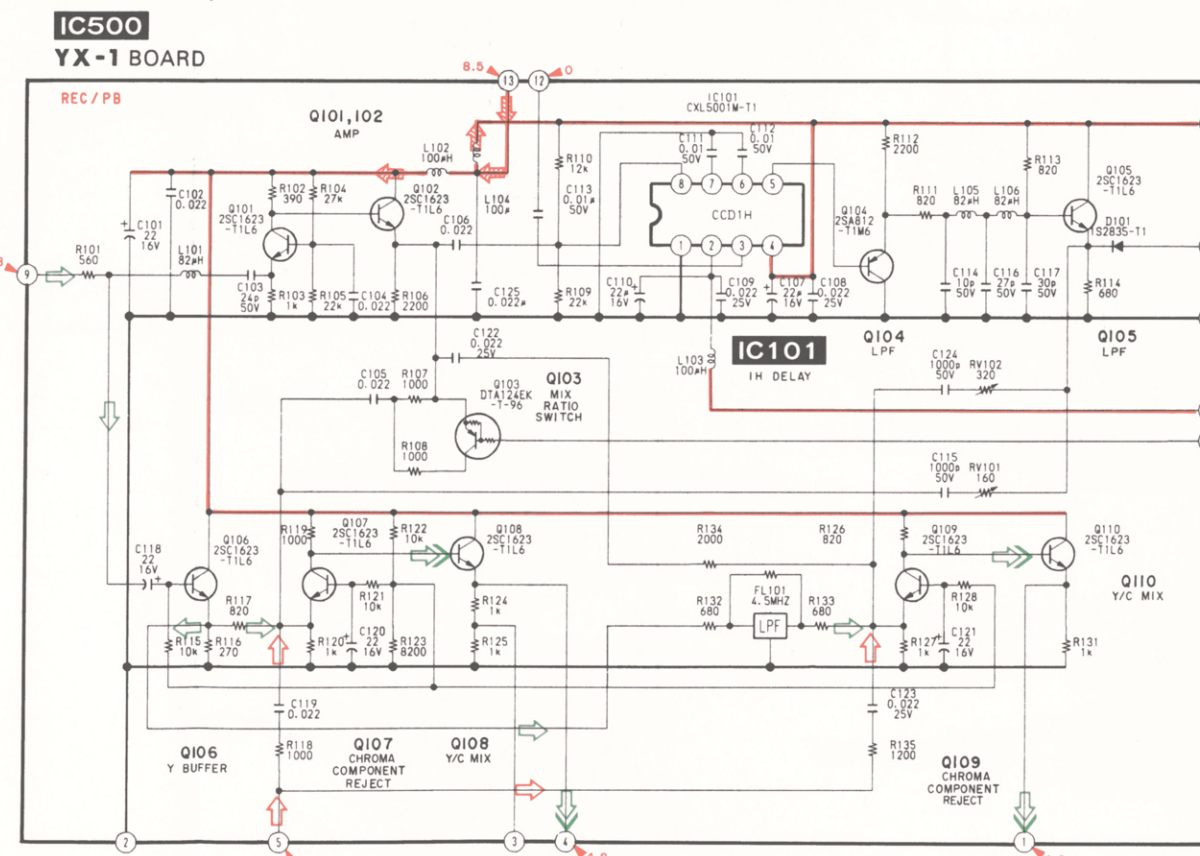




- **Signal path**
 - ➡ : REC Y Signal
 - ➡ : PB Y Signal
 - ➡ : REC CHROMA Signal
 - ➡ : PB CHROMA Signal
 - ➡ : REC Y/CHROMA Signal
 - ➡ : PB Y/CHROMA Signal

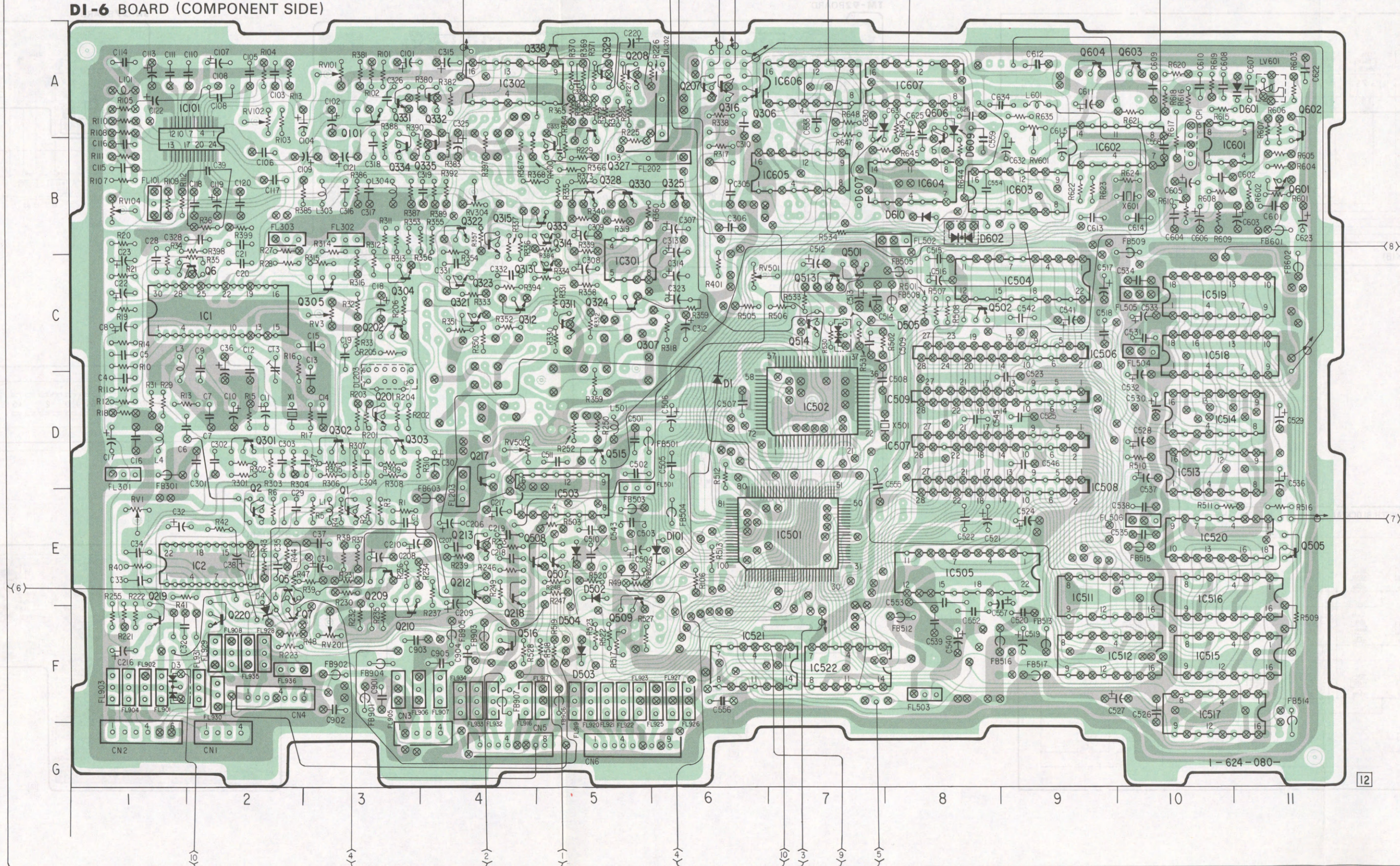


YX-1 board is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.

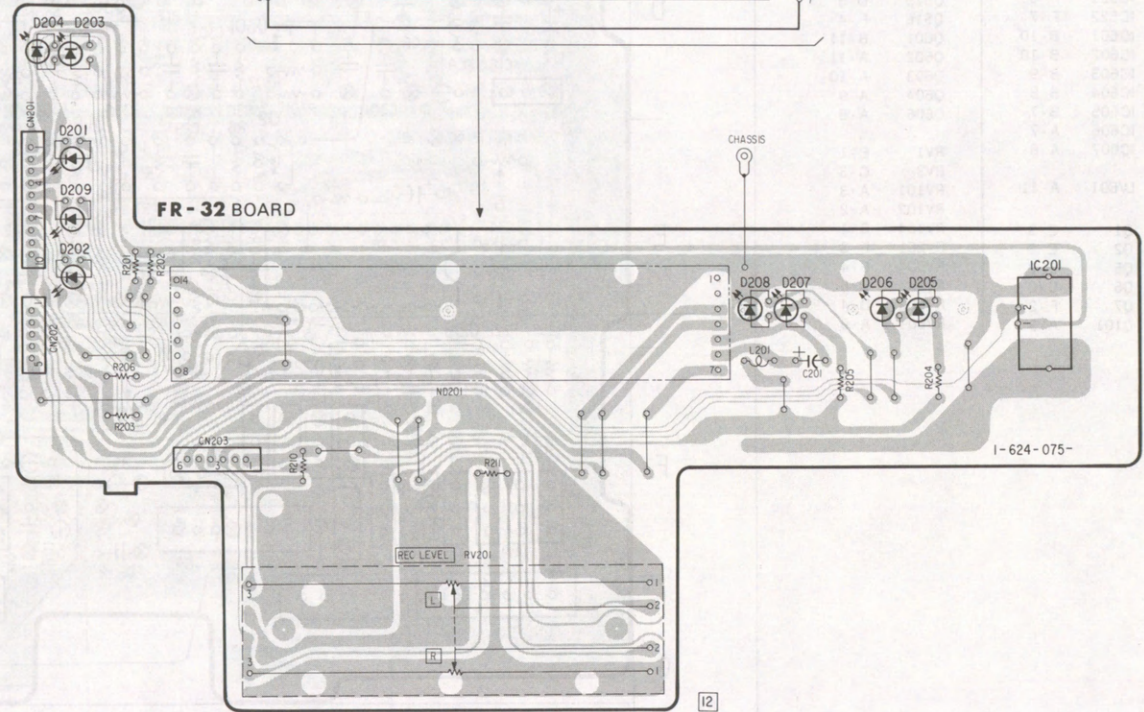
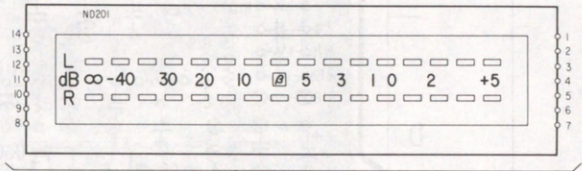
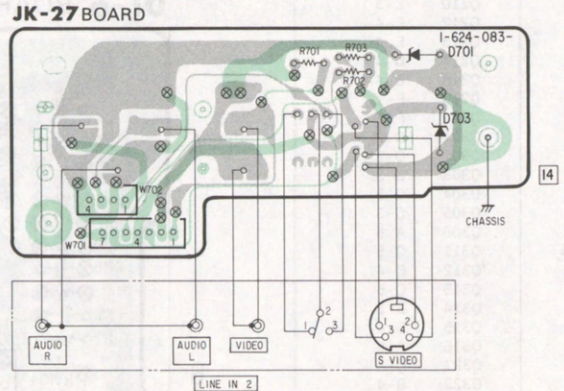
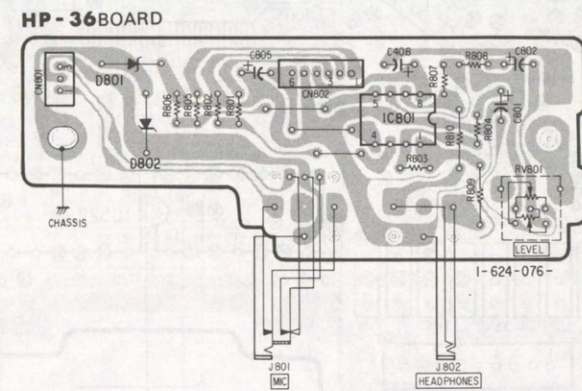
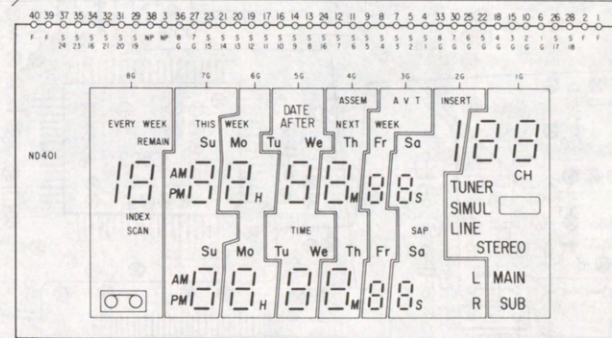
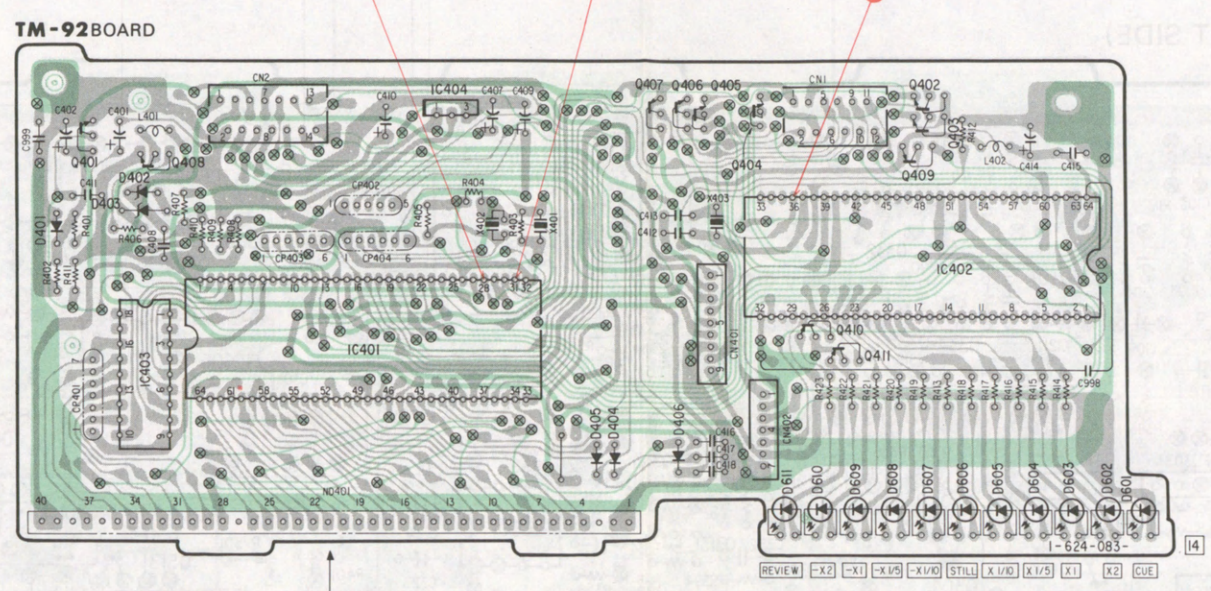
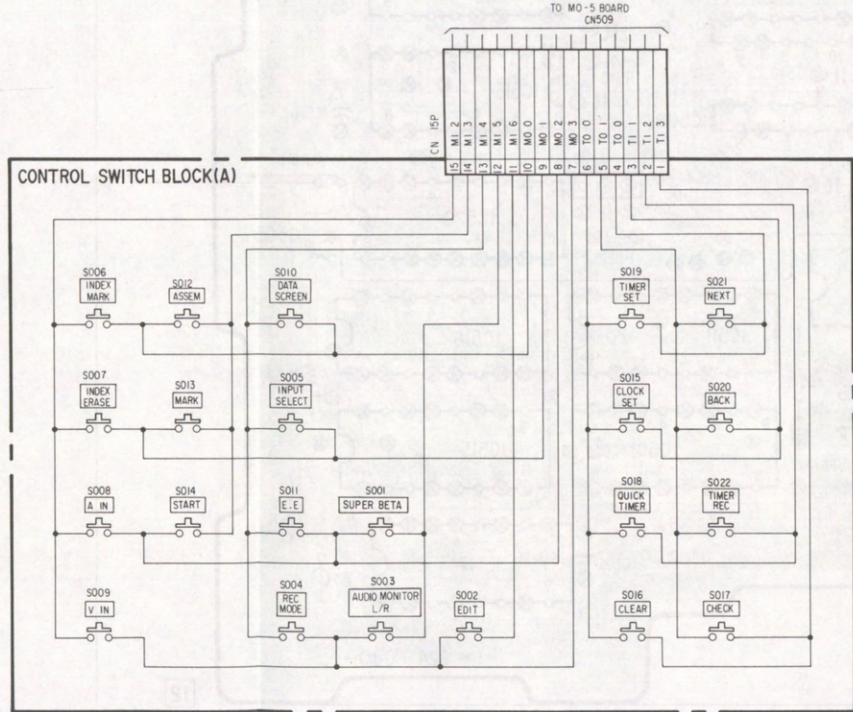
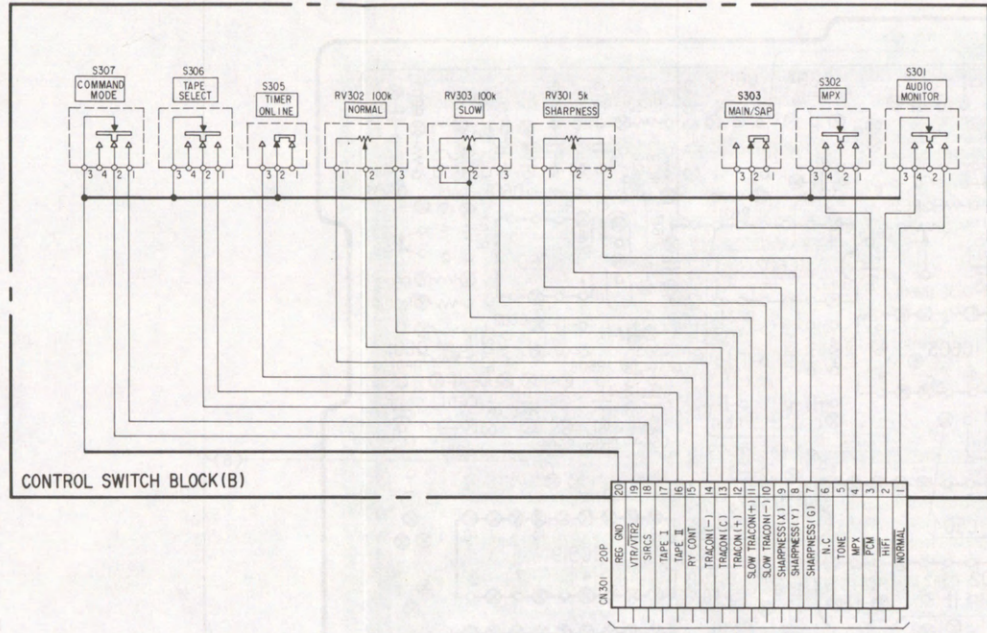
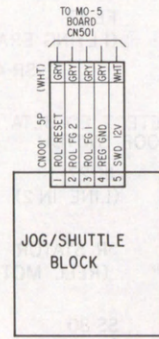
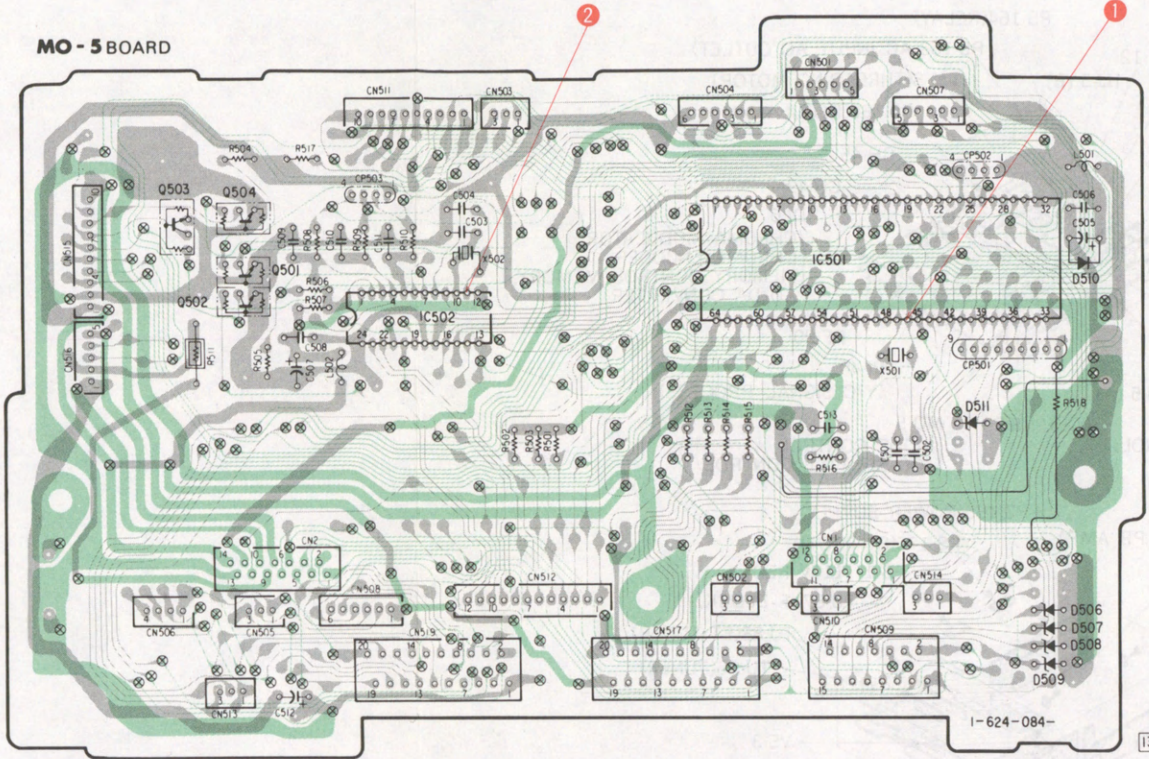
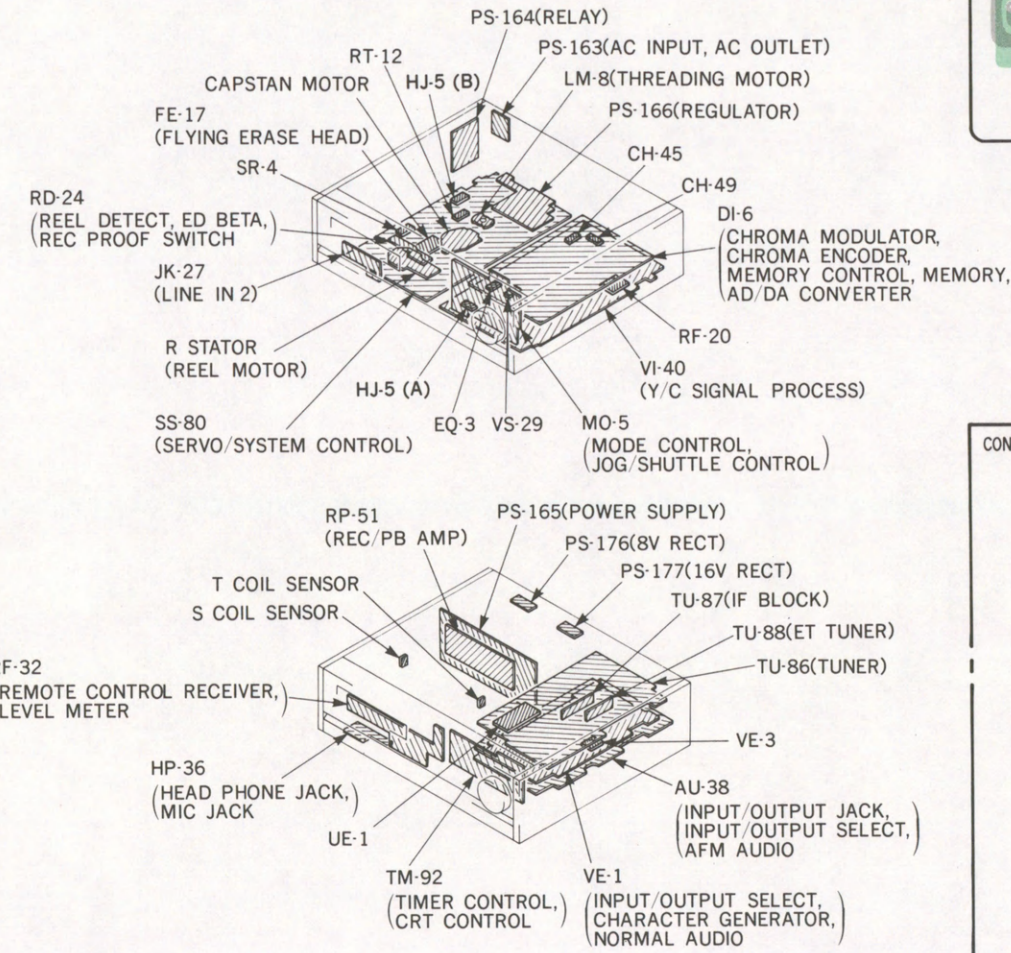


DI-6 (A-D/D-A CONVERTER, MEMORY CONTROL, MEMORY) PRINTED WIRING BOARD
—Ref. No. DI-6 BOARD: 11,000 series—

CN1	G-2	Q201	D-3
CN2	G-1	Q202	C-3
CN3	G-4	Q207	A-6
CN4	F-2	Q208	A-5
CN5	G-4	Q209	E-3
CN6	G-5	Q210	E-3
		Q212	E-4
CT3	D-2	Q213	E-4
CT601	A-7	Q217	D-4
		Q218	E-4
		Q219	F-1
D1	C-6	Q220	F-2
D3	F-1	Q221	D-2
D4	F-2	Q302	D-3
D101	E-6	Q303	D-3
D502	E-5	Q304	C-3
D503	F-5	Q305	C-3
D504	E-5	Q306	A-6
D505	C-7	Q311	C-5
D601	A-11	Q312	C-4
D602	B-8	Q313	C-5
D607	A-8	Q314	B-5
D609	A-8	Q315	B-4
D610	B-8	Q316	A-6
		Q321	C-4
IC1	C-2	Q322	B-4
IC2	E-2	Q323	C-4
IC101	B-2	Q324	C-5
IC301	C-5	Q325	B-5
IC302	A-4	Q326	B-5
IC501	E-7	Q327	B-5
IC502	D-7	Q328	B-5
IC503	E-5	Q329	A-5
IC504	C-8	Q330	B-5
IC505	E-8	Q331	A-3
IC506	C-9	Q332	A-4
IC507	D-9	Q333	B-5
IC508	E-9	Q334	B-3
IC509	D-9	Q335	B-4
IC511	E-9	Q338	A-5
IC512	F-9	Q501	C-7
IC513	D-10	Q502	C-8
IC514	D-10	Q505	E-11
IC515	F-10	Q507	E-5
IC516	E-10	Q508	E-5
IC517	F-10	Q509	F-5
IC518	C-10	Q513	C-7
IC519	C-10	Q514	C-7
IC520	E-10	Q515	D-5
IC521	F-6	Q516	F-4
IC522	F-7	Q601	B-11
IC601	B-10	Q602	A-11
IC602	B-10	Q603	A-10
IC603	B-9	Q604	A-9
IC604	B-8	Q606	A-8
IC605	B-7		
IC606	A-7		
IC607	A-8		
		RV1	E-1
		RV3	C-3
		RV101	A-3
		RV102	A-2
		RV104	B-1
		RV201	F-3
		RV304	B-4
		RV501	C-6
		RV502	D-4
		RV601	A-9
Q1	E-3		
Q2	E-2		
Q5	E-2		
Q6	C-2		
Q7	F-2		
Q101	A-3		



- Digital transistor (TM-92 : Q402, 403 404, 405 406, 407,409) transistor with resistor.



4-1. FRAME SCHEMATIC DIAGRAM



NOTE

• For printed wiring boards.

- : indicates a lead wire mounted on the component side.
- : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ⊠ : conductor side.
- : component side.

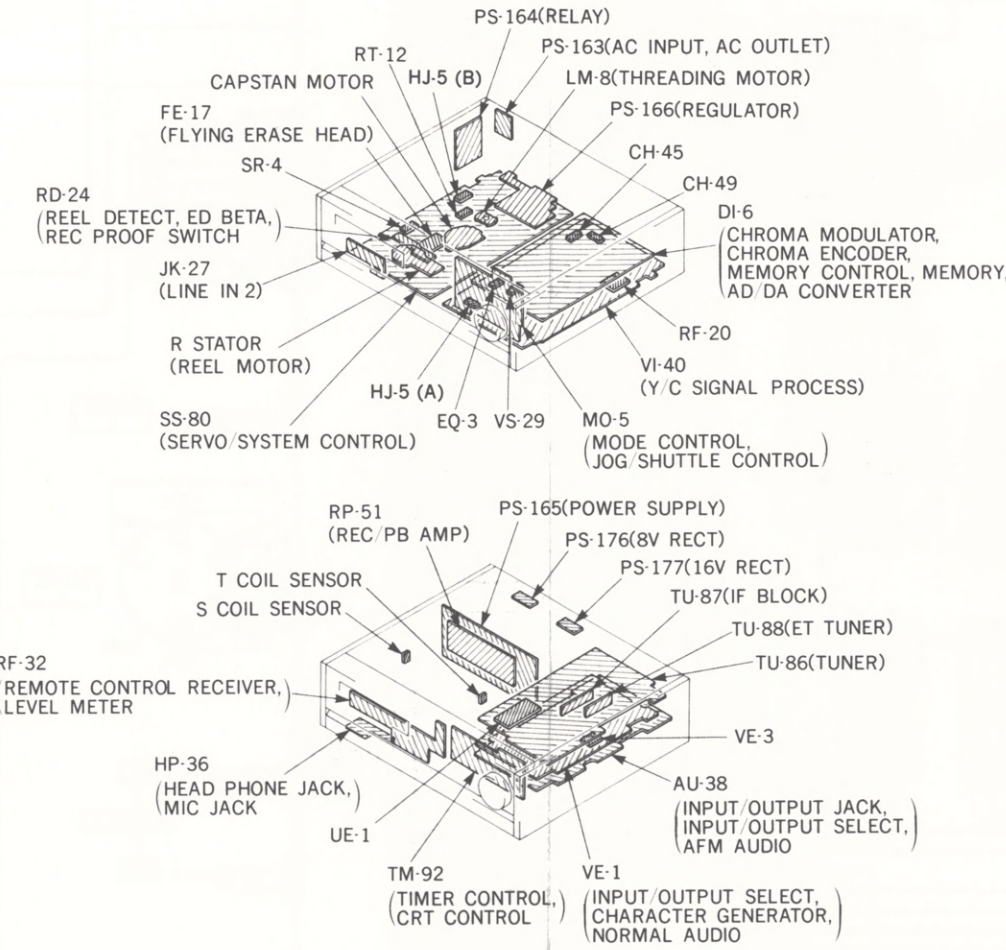
• For schematic diagram

- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
- Chip resistor are 1/10W unless otherwise noted.
kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF.
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- : B + Line.
- : B - Line.
- : IN/OUT direction of (+, -) B line.
- * : selected to yield optimum performance.
- Circled numbers refer to waveforms.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque  ou une ligne pointillée avec une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

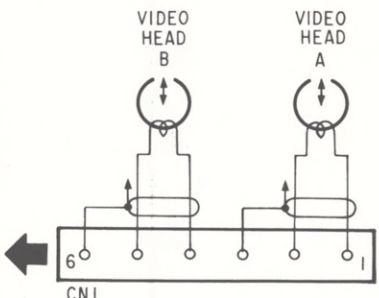
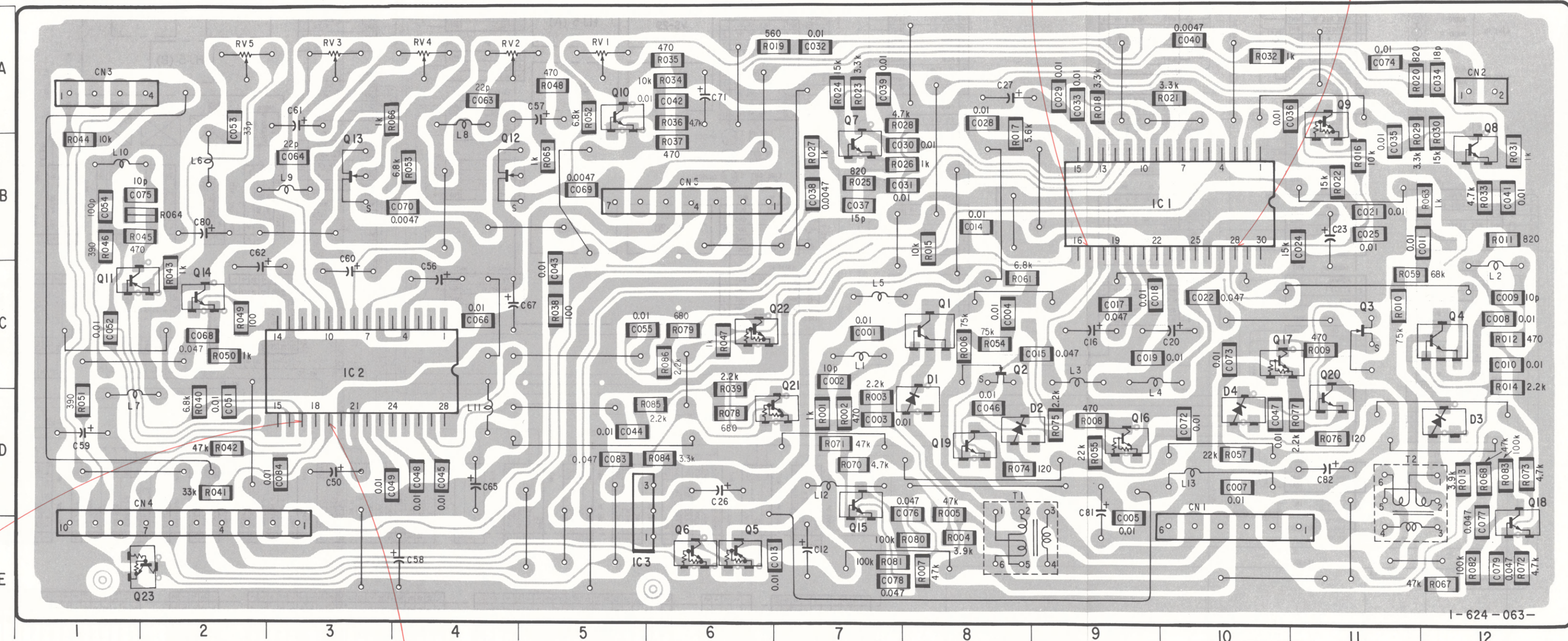
When indicating parts by reference number, please include the board name.



RP-51 (REC/PB AMP) PRINTED WIRING BOARD
—Ref. No. RP-51 BOARD: 1,000 series—

RP-51 BOARD

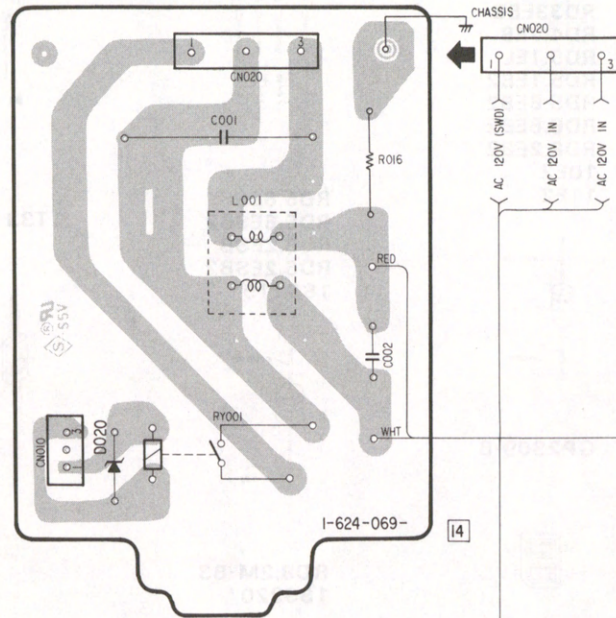
CN1	E-10
CN2	A-12
CN3	A-1
CN4	E-1
CN5	B-6
D1	D-8
D2	D-8
D3	D-12
D4	D-10
IC1	B-9
IC2	C-3
IC3	E-5
Q1	C-8
Q2	D-8
Q3	C-11
Q4	C-12
Q5	E-6
Q6	E-6
Q7	B-7
Q8	B-12
Q9	A-11
Q10	A-5
Q11	C-1
Q12	B-4
Q13	B-3
Q14	C-2
Q15	D-7
Q16	D-9
Q17	C-10
Q18	D-12
Q19	D-8
Q20	D-11
Q21	D-7
Q22	C-6
Q23	E-1
RV1	A-5
RV2	A-4
RV3	A-3
RV4	A-4
RV5	A-2



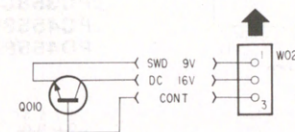
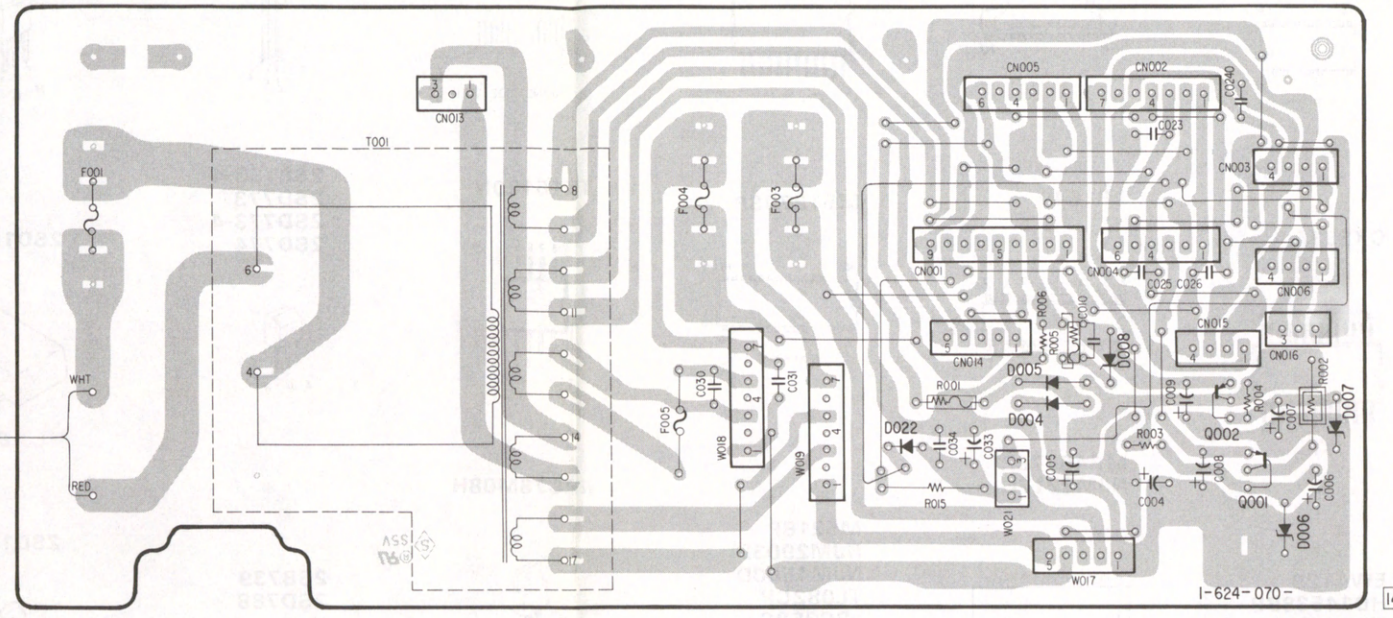
PS-165 (POWER SUPPLY), PS-163 (AC INPUT, AC OUTLET), PS-164 (RELAY), PS-166 (REGULATOR), PS-176 (8V RECT), PS-177 (16V RECT) PRINTED WIRING BOARDS

—Ref. No. PS-165 BOARD: 13,000 series, PS-164 BOARD: 14,000 series, PS-166 BOARD: 15,000 series, PS-176 BOARD: 16,000 series, PS-177 BOARD: 17,000 series—

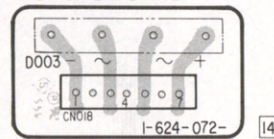
PS-164 BOARD



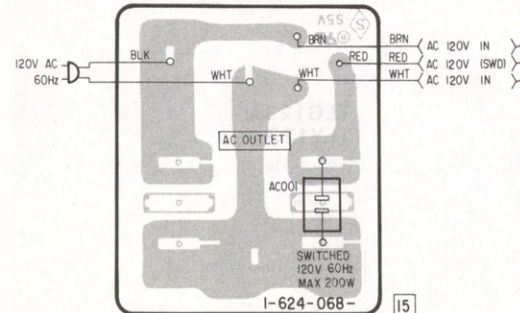
PS-165 BOARD



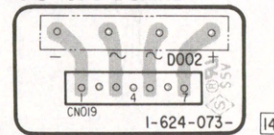
PS-176 BOARD



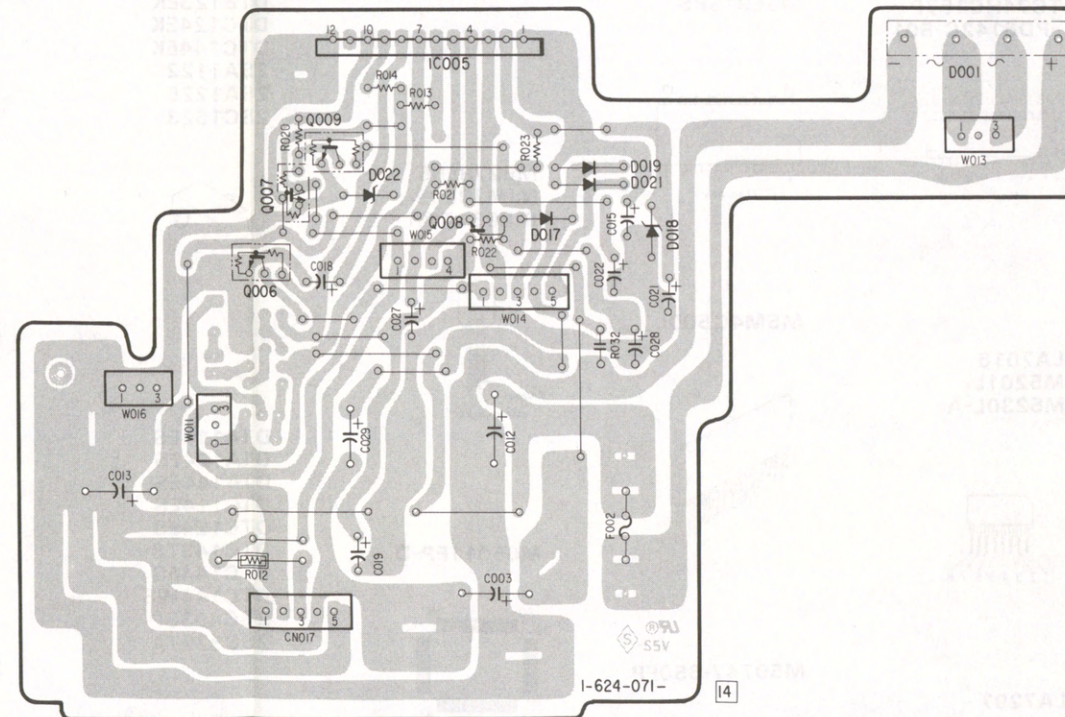
PS-163 BOARD



PS-177 BOARD



PS-166 BOARD

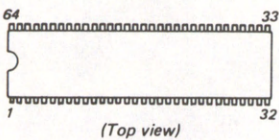


4-3. SEMICONDUCTORS

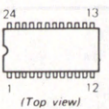
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CX894
LA7205



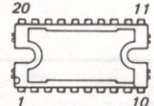
CXP5048H-099S
M50955-1
 μ PD75108CW-096



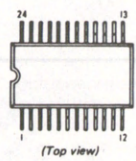
CX867
 μ PD7566CS-043



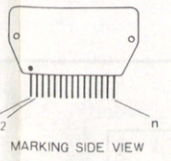
LB1615



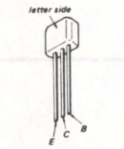
M51272FP



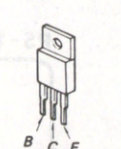
STK5478S



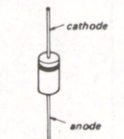
2SA1175



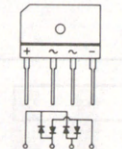
2SD880
2SD1585



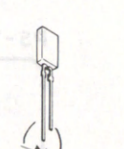
EK04
HZ7B2L
RD13EB2
RD18EL1
RD30EB2
RD33EB2
RD4.7EB
RD5.1EL
RD5.1EB2
RD5.6EB2
RD6.8EB2
RD8.2EB2
10E2
11E2



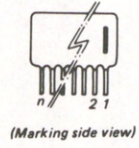
RBV-406B



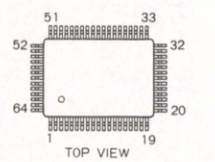
TLG211-GH
TLY211



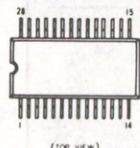
BX1090
BX3983



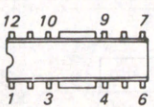
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CXP5048H-110Q
CXP5048H-117Q
 μ PD7507HCU-203



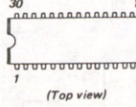
CX893A



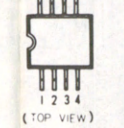
LB1649



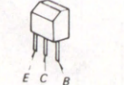
M51279SP



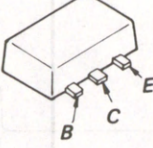
TK15120N



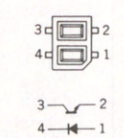
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2SD773
2SD773-4
2SD774



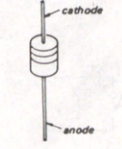
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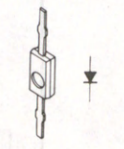
GP2S09-B



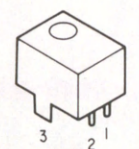
RD5.6ESB
RD5.6ESB2
RD6.2ESB
RD6.2ESB2
1SS119



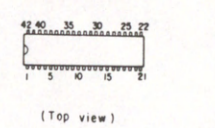
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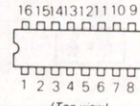
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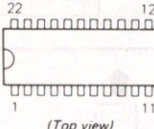
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CX194B-3
CX20097A
CX20105A
MC68HC05N2-SLX1211



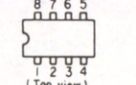
EWA129
HD14538BP
HGA0801
MC14538BCP
MC14053BCP
MC74HC4053N
MSM6411B-19RS
TC4051BP
TC4052BP
TC4053BP
TC74HC123P
TC74HC157P
 μ PD6142C-501



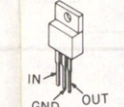
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NJM2217L



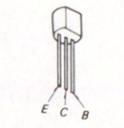
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NJM2903D
NJM4560D
TL082CP
 μ PC358C
 μ PC4558C
 μ PD4558C



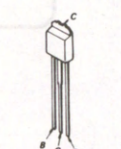
μ PC78M08H



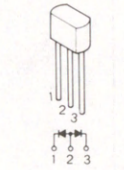
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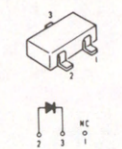
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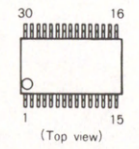
MC911



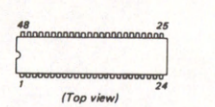
RD8.2M-B3
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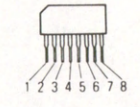
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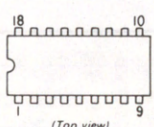
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CX20104



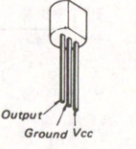
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M5230L-A



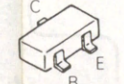
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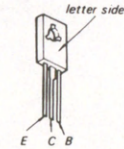
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S-8051ANR



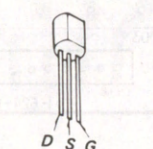
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DTB123EK
DTC124EK
DTC144EK
2SA1122
2SA1226
2SC1623



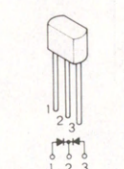
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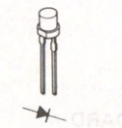
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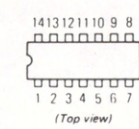
MC921



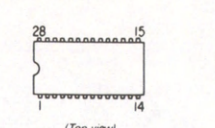
SEL2413E



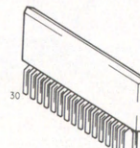
CXD1049P
MC14066BCP
TC40H008P
TC4011BP
TC4066BP
TC4081BP
TC504013BP
TC74HC04P
TC74HC08P
TC74HC74P
 μ PC324C



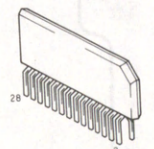
CX20069
CX20126



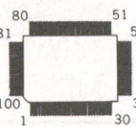
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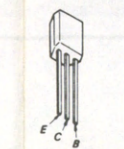
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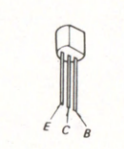
M65011FP-D



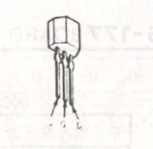
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DTA144ES
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DTC144WS
2SC403SP
2SC3327A



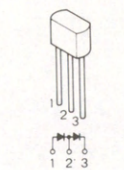
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2SD655-E



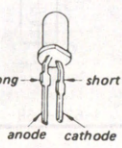
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MC931



TLG123A
TLY123



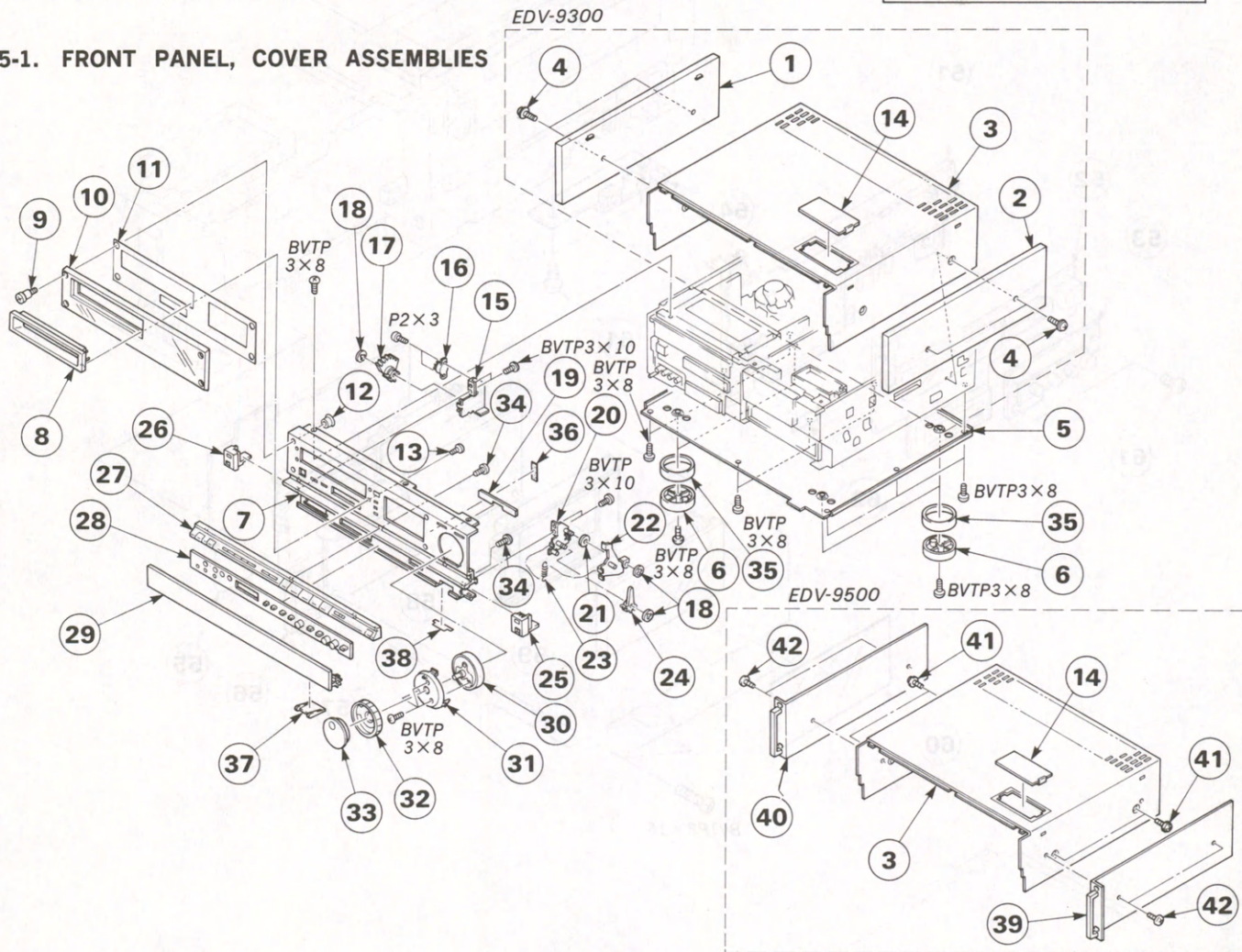
SECTION 5 EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

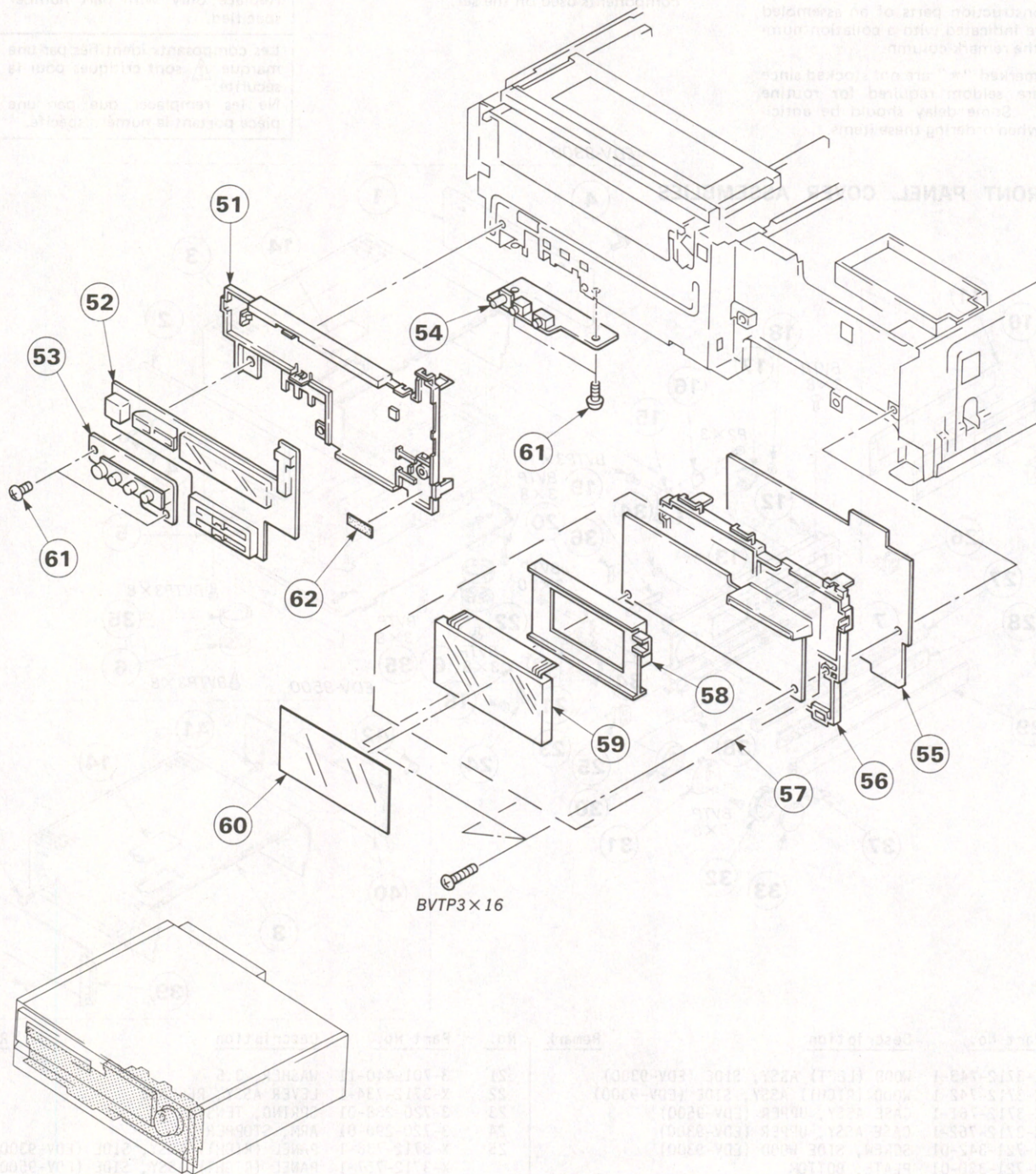
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. FRONT PANEL, COVER ASSEMBLIES

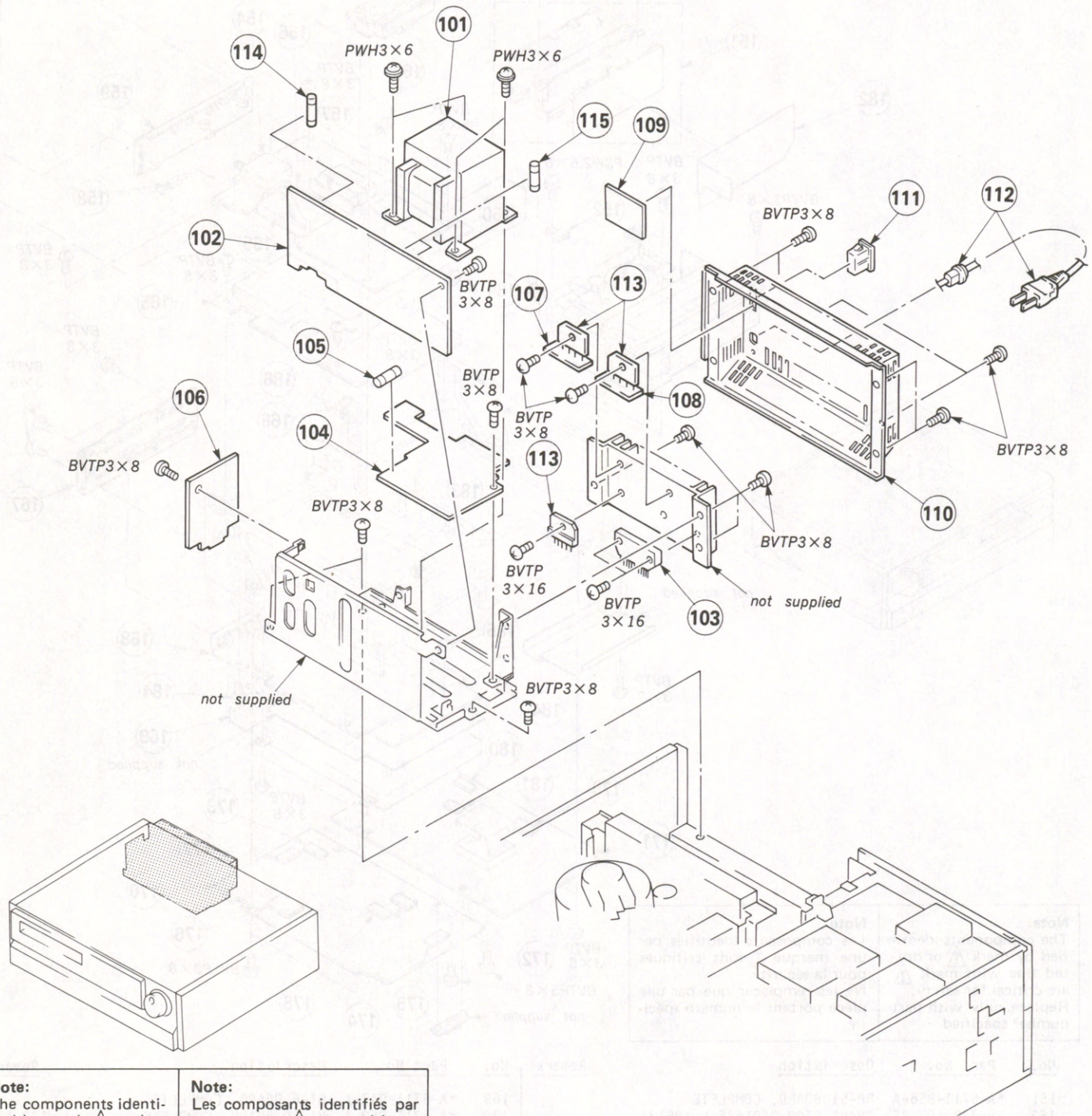
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	X-3712-743-1	WOOD (LEFT) ASSY, SIDE (EDV-9300)		21	3-701-440-11	WASHER, 3.5	
2	X-3712-742-1	WOOD (RIGHT) ASSY, SIDE (EDV-9300)		22	X-3712-734-1	LEVER ASSY, RELEASE	
3	X-3712-761-1	CASE ASSY, UPPER (EDV-9500)		23	3-720-288-01	SPRING, TENSION	
	X-3712-762-1	CASE ASSY, UPPER (EDV-9300)		24	3-720-290-01	ARM, STOPPER	
4	3-721-342-01	SCREW, SIDE WOOD (EDV-9300)		25	X-3712-736-1	PANEL (RIGHT) ASSY, SIDE (EDV-9300)	
5	*3-721-330-01	PLATE, BOTTOM			X-3712-757-1	PANEL (RIGHT) ASSY, SIDE (EDV-9500)	
6	X-3720-334-1	FOOT ASSY		26	X-3712-737-1	PANEL (LEFT) ASSY, SIDE (EDV-9300)	
7	3-721-331-01	SASH, FRONT (EDV-9300)			X-3712-758-1	PANEL (LEFT) ASSY, SIDE (EDV-9500)	
	3-721-331-11	SASH, FRONT (EDV-9500)		27	1-464-883-11	SWITCH BLOCK, CONTROL (C)	
8	3-720-245-01	ESCUTCHEON, FL		28	1-464-882-21	SWITCH BLOCK, CONTROL (B)	
9	X-3712-752-1	HEAD ASSY, FIXED		29	1-464-881-22	SWITCH BLOCK, CONTROL (A)	
10	X-3712-750-1	PLATE ASSY, TRANSPARENT, PANEL		30	1-464-705-11	ENCODER, ROTARY	
11	3-720-230-11	PLATE, ORNAMENTAL (EDV-9300)		31	3-721-340-01	BASE, JOG	
	3-720-230-21	PLATE, ORNAMENTAL (EDV-9500)		32	3-721-202-01	RING, SHUTTLE	
12	3-721-362-01	RIVET, FIXED, TRANSPARENT PLATE		33	3-720-487-01	DIAL, JOG	
13	2-370-905-00	SCREW (B) (2X8), TAPPING		34	3-669-480-21	+ PTPWH 2	
14	3-684-177-61	LID, PRESET (EDV-9300)		35	3-720-489-01	COVER, FOOT	
	3-684-177-81	LID, PRESET (EDV-9500)		36	3-831-441-XX	CUSHION, SPEAKER	
15	X-3712-732-1	HOLDER (LEFT) ASSY, DOOR		37	*3-721-373-01	COVER, HARNESS	
16	3-712-786-11	DAMPER, OIL		38	*3-721-394-01	COVER, FLEXIBLE	
17	3-720-294-01	GEAR, MIDWAY, DOOR		39	A-6704-334-A	ANGLE (RIGHT) BLOCK ASSY, RACK (EDV-9500)	
18	3-669-596-00	WASHER (2.3), STOPPER		40	A-6704-335-A	ANGLE (LEFT) BLOCK ASSY, RACK (EDV-9500)	
19	3-721-308-01	INDICATOR, J/S		41	4-886-821-01	SCREW, M3 CASE (EDV-9500)	
20	X-3712-733-1	HOLDER (RIGHT) ASSY, DOOR		42	3-726-412-01	SCREW (M5X8), (+) B	

5-2. TIMER ASSEMBLY



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	*3-720-249-01	HOLDER, FR		57	*A-6729-716-A	TM-92 BOARD, COMPLETE	58, 59
52	*1-624-075-11	FR-32 BOARD		58	*X-3712-735-1	HOLDER ASSY, INDICATION TUBE	
53	*1-624-083-11	JK-27 BOARD		59	1-519-395-11	INDICATOR TUBE, FLUORESCENT (ND401)	
54	*1-624-076-11	HP-36 BOARD		60	*3-720-297-01	FILTER (1)	
55	*A-6729-578-A	MO-5 BOARD, COMPLETE		61	3-693-912-11	SCREW (3X8), TAPPING	
56	*3-720-253-01	HOLDER, TIMER		62	3-831-441-XX	CUSHION, SPEAKER	

5-3. POWER ASSEMBLY



Note:

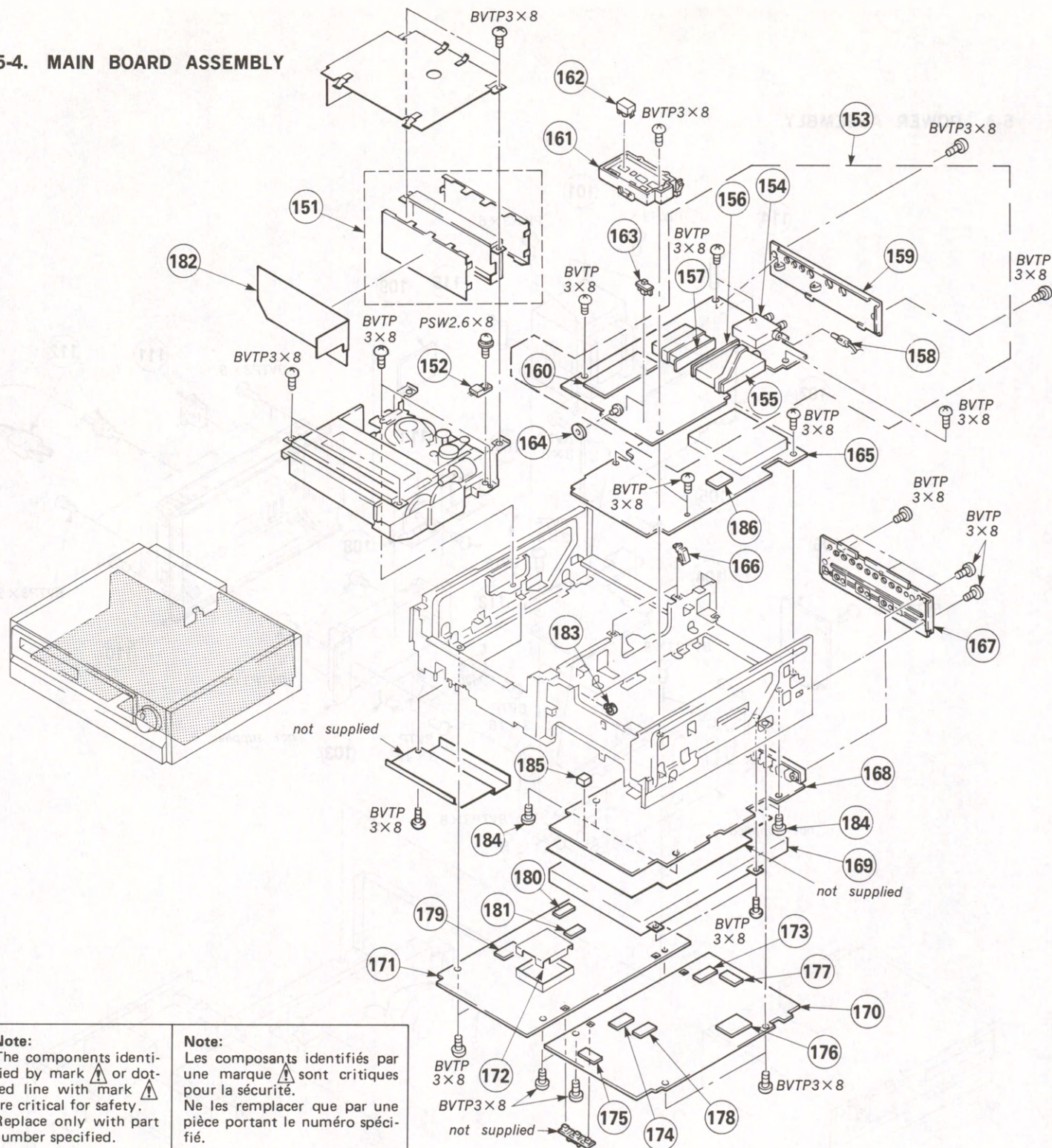
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	 1-449-276-11	TRANSFORMER, POWER (T001)		109	*1-624-068-11	PS-163 BOARD	
102	*1-624-070-11	PS-165 BOARD		110	*X-3712-756-2	PANEL ASSY, REAR, POWER	
103	8-749-920-06	IC STK5478S (IC 005)		111	 1-526-882-00	OUTLET, AC	
104	*1-624-071-11	PS-166 BOARD		112	 1-559-129-21	CORD, POWER (WITH CORD BUSHING)	
105	 1-532-747-11	FUSE, GLASS TUBE (5A/125V) (F002)		113	8-719-309-99	DIODE RBV-406B (D001-D003)	
106	*A-6722-365-A	PS-164 BOARD, COMPLETE		114	 1-532-743-11	FUSE, GLASS TUBE (2A/125V) (F001)	
107	*1-624-072-11	PS-176 BOARD		115	 1-532-745-11	FUSE, GLASS TUBE (3.15A/125V) (F003, 004)	
108	*1-624-073-11	PS-177 BOARD					

5-4. MAIN BOARD ASSEMBLY



Note:

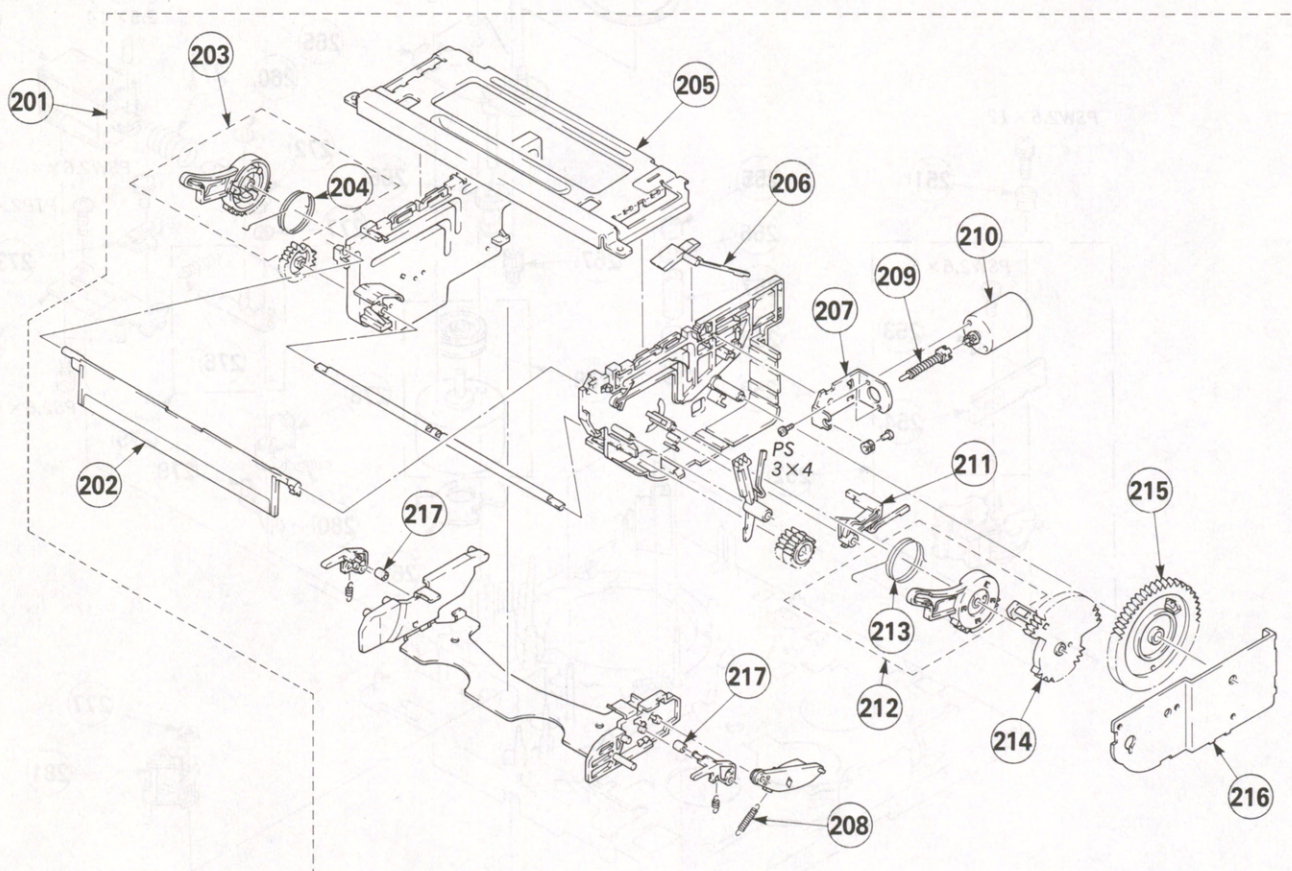
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

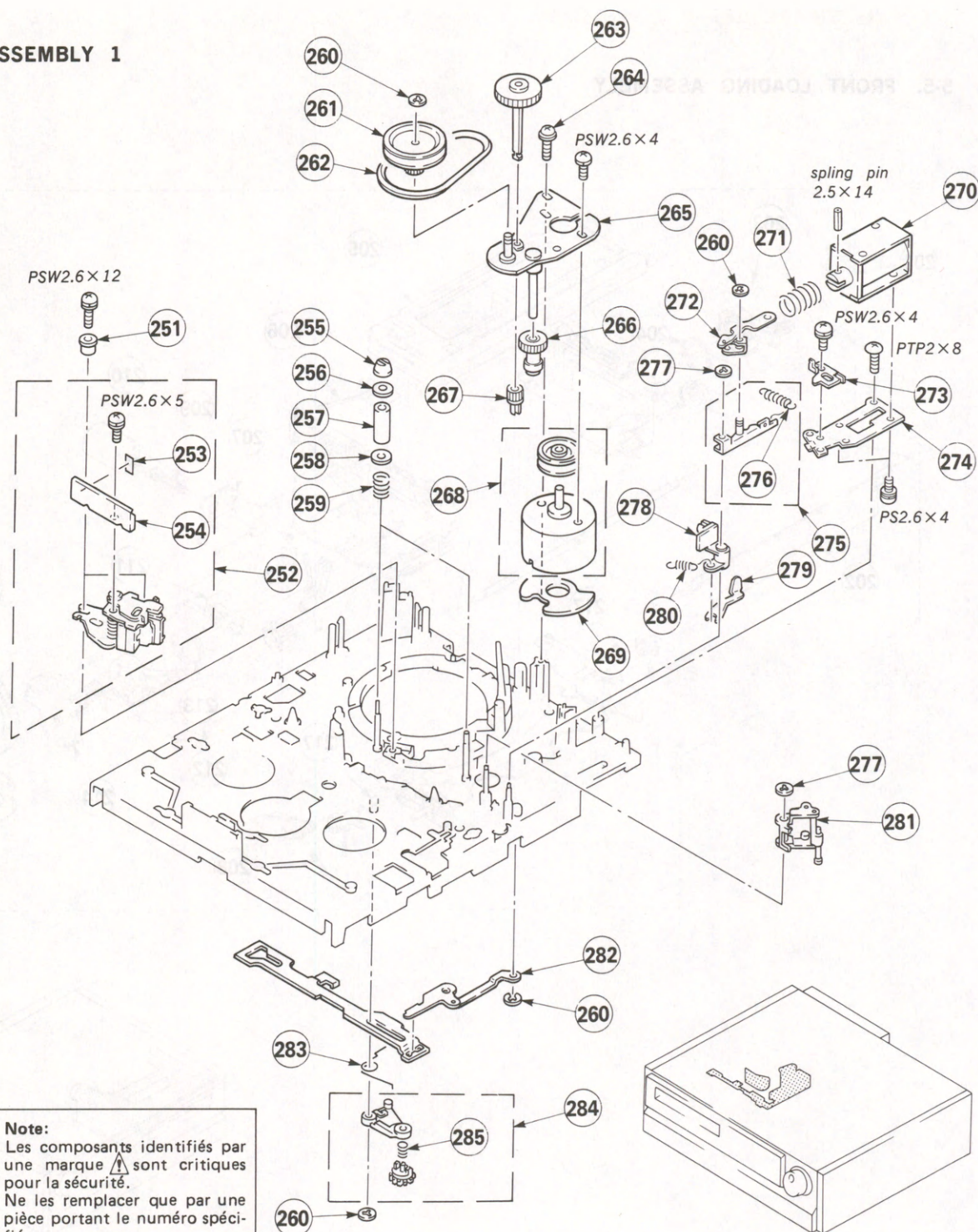
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	*A-6711-856-A	RP-51 BOARD, COMPLETE		169	*A-6711-947-A	DI-6 BOARD, COMPLETE	
152	8-729-107-25	TRANSISTOR 2SD1585-L (Q513)		170	*A-6711-952-A	VI-40 BOARD, COMPLETE	173-178
153	*A-6721-289-A	TU-86 BOARD, COMPLETE	154-160	171	*A-6715-860-A	SS-80 BOARD, COMPLETE	172, 179-181
154	 1-464-799-21	MODULATOR, RF (RFU-793) (ANT901)		172	*A-6725-578-A	FE-17 BOARD, COMPLETE	
155	 1-463-771-11	TUNER, ET (BTP-201A) (TU901)		173	*A-6724-600-A	CH-45 BOARD, COMPLETE	
156	*1-624-067-21	TU-88 BOARD		174	*A-6724-601-A	EQ-3 BOARD, COMPLETE	
157	*1-624-066-21	TU-87 BOARD		175	*A-6724-605-A	HJ-5(A) BOARD, COMPLETE	
158	*1-556-945-21	CABLE, PIN		176	*A-6724-617-A	RF-20 BOARD, COMPLETE	
159	3-720-263-11	PANEL (UPPER), ORNAMENTAL, REAR		177	*A-6724-618-A	CH-49 BOARD, COMPLETE	
160	*A-6729-652-A	UE-1 BOARD, COMPLETE		178	*1-624-682-11	VS-29 BOARD	
161	3-721-322-11	PANEL, PRESET		179	*A-6729-683-A	SR-4 BOARD, COMPLETE	
162	2-291-041-00	BUTTON (A), PRESET		180	*A-6729-685-A	HJ-5(B) BOARD, COMPLETE	
163	3-696-563-11	KNOB, SLIDE		181	*A-6729-690-A	RT-12 BOARD, COMPLETE	
164	3-684-413-02	KNOB, CONTROL		182	*3-721-379-01	PLATE, HEAT RESISTING	
165	*A-6711-946-A	VE-1 BOARD, COMPLETE	186	183	*3-697-707-01	CLAMP (A), HARNESS	
166	*3-684-367-01	HINGE, PCB		184	3-693-912-11	SCREW (3x8), TAPPING	
167	*3-721-323-11	PANEL (LOWER), ORNAMENTAL, REAR		185	*3-721-392-01	SPACER, AV	
168	*A-6713-331-A	AU-38 BOARD, COMPLETE		186	*1-627-292-11	VE-3 BOARD	

5-5. FRONT LOADING ASSEMBLY



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
201	A-6751-374-A	THREADING BLOCK ASSY, FRONT	202-217	210	X-3696-314-1	MOTOR ASSY, L (LOADING) (M955)	
202	X-3712-738-1	DOOR ASSY, CASSETTE COMPARTMENT		211	3-716-083-01	LEVER, CASSETTE IN SWITCH	
203	A-6751-334-A	ARM (LEFT) BLOCK ASSY, DRIVING	204	212	A-6751-335-A	ARM (RIGHT) BLOCK ASSY, DRIVING	213
204	3-716-030-01	SPRING (LEFT), TORSION		213	3-716-029-01	SPRING (RIGHT), TORSION	
205	*3-720-252-01	PLATE, TOP		214	3-716-069-01	GEAR, DRIVING	
206	3-716-021-01	LOCK, DECK		215	3-716-082-01	WHEEL, WORM	
207	3-716-145-01	BRACKET, MOTOR		216	3-716-094-01	COVER, GEAR	
208	3-716-155-01	SPRING, TENSION		217	*3-886-569-00	TUBE, RUBBER	
209	3-716-028-01	GEAR, WORM					

5-6. CHASSIS ASSEMBLY 1



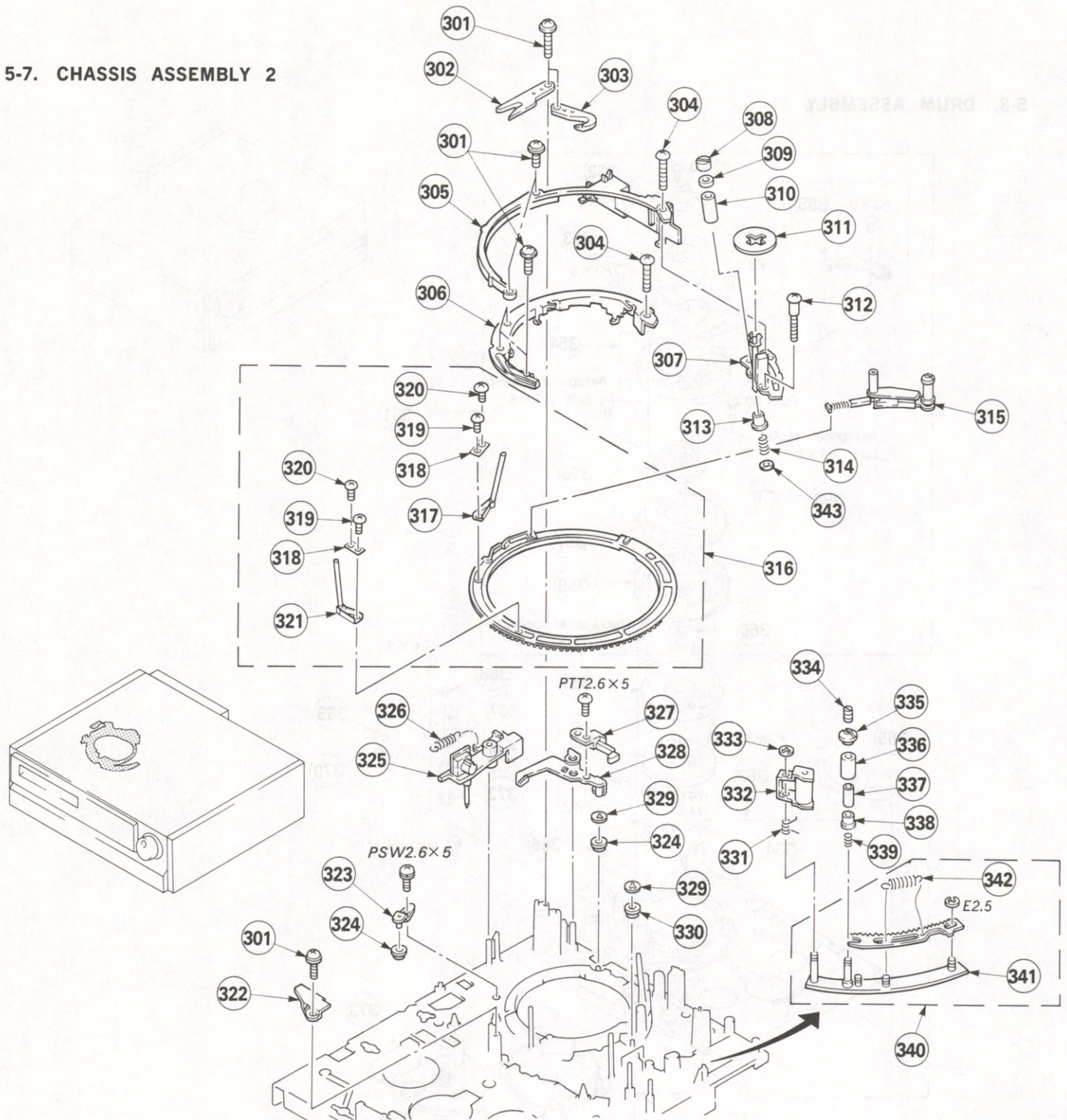
Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description
251	3-684-247-01	BUSHING, ACE
252	A-6761-123-A	HEAD BLOCK ASSY, ACE
253	3-693-904-01	SHEET (P), INSULATING
254	3-693-895-01	PROTECTOR (S)
255	A-6759-246-B	NUT, ADJUSTMENT, GUIDE
256	3-684-135-01	WASHER (UPPER), GUIDE, #7, 8
257	3-693-830-01	SLEEVE, GUIDE, #7, #8
258	3-693-831-01	WASHER, GUIDE
259	3-693-943-01	SPRING (#7, #8), COMPRESSION
260	3-669-465-00	WASHER (1.5), STOPPER
261	3-720-219-01	PULLEY (D) (I), GEAR
262	3-669-327-00	BELT, RUBBER
263	3-720-220-01	GEAR (BA) (I)
264	3-669-480-11	+ PTPWH 2
265	X-3712-721-1	PC BOARD ASSY (I), L MOTOR
266	X-3669-321-0	GEAR (C) ASSY
267	3-669-333-00	GEAR (BC)
268	A-6737-090-A	MOTOR ASSY, L (THREADING) (M952)

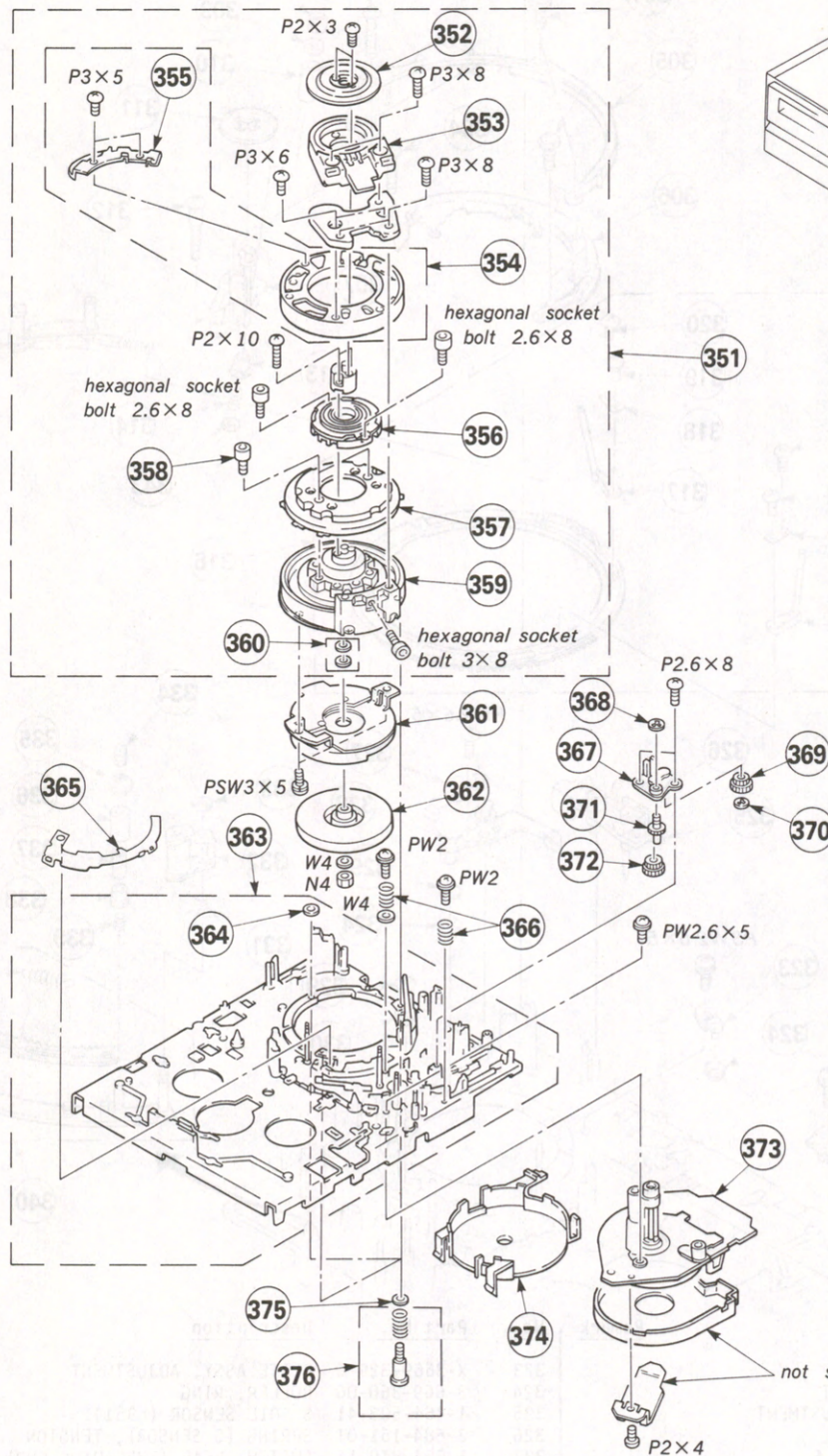
Remark	No.	Part No.	Description	Remark
	269	*1-605-071-00	LM-8 BOARD	
253, 254	270	 1-454-393-21	SOLENOID, PLUNGER (PINCH) (PM952)	
	271	2-269-309-00	SPRING, COMPRESSION	
	272	X-3684-109-1	ARM ASSY, PINCH SOLENOID	
	273	3-679-141-02	PLATE, ADJUSTMENT, PINCH LIMITER	
	274	3-684-173-01	CHASSIS, SOLENOID	
	275	*X-3684-112-1	ARM ASSY, PINCH LIMITER	276
	276	3-515-170-00	SPRING, TENSION	
	277	3-669-595-00	WASHER (2), STOPPER	
	278	1-464-491-51	T COIL SENSOR (L952)	
	279	*3-684-119-01	LINK, TAKE-UP SENSOR	
	280	3-684-157-04	SPRING (T SENSOR), TENSION	
	281	X-3684-113-1	ARM ASSY, PINCH PRESS	
	282	*X-3691-602-1	LEVER ASSY (M), COMMUNICATION	
	283	3-681-154-00	SPRING, TORSION	
	284	X-3691-648-1	ARM ASSY (B), REVIEW BRAKE	285
	285	3-691-792-01	SPRING, COMPRESSION	

5-7. CHASSIS ASSEMBLY 2



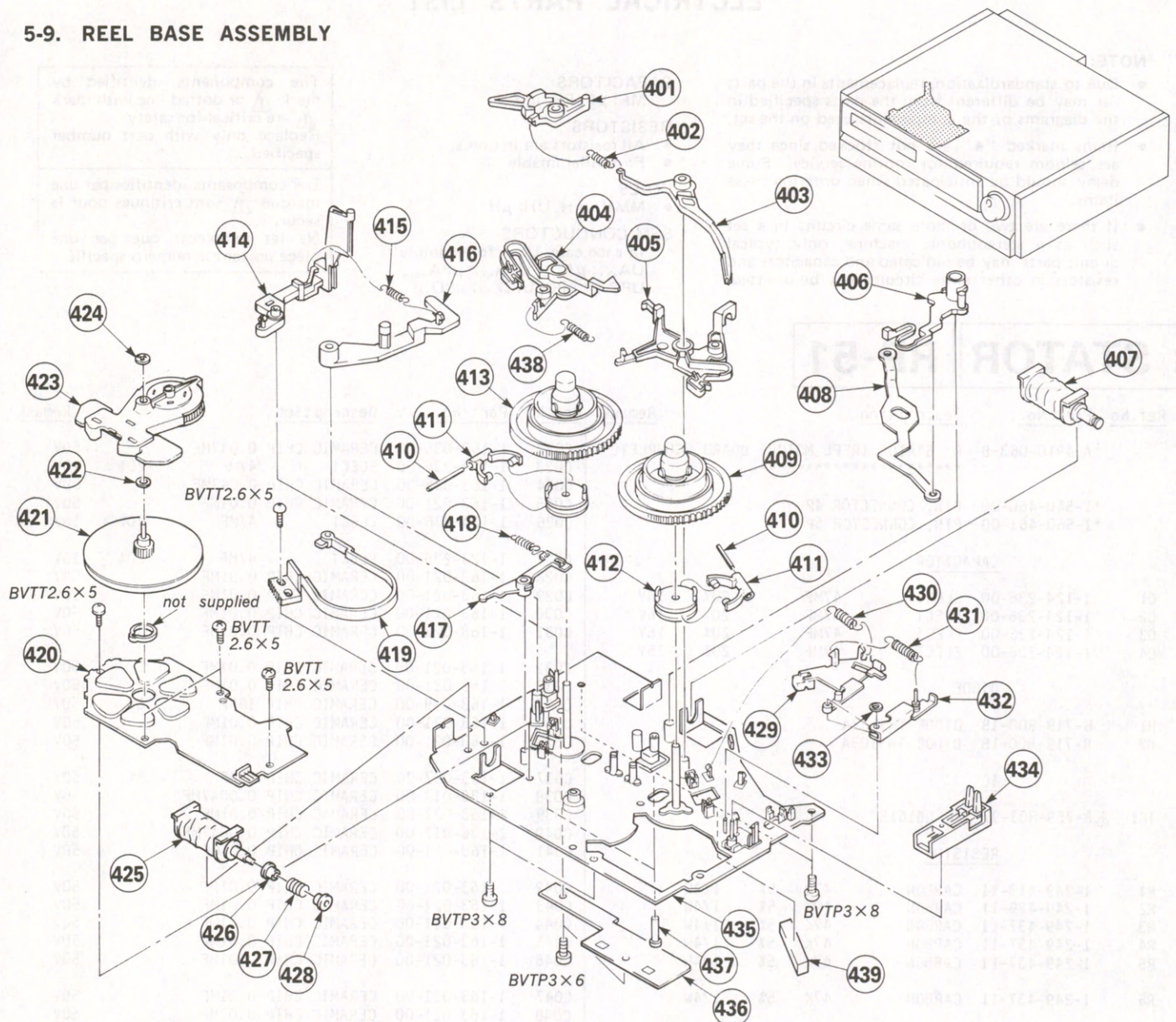
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
301	3-669-480-11	+ PTPWH 2		323	X-3669-329-0	PLATE ASSY, ADJUSTMENT	
302	*3-669-618-00	PLATE (2), ADJUST		324	3-669-360-00	ROLLER, RING	
303	*3-672-507-00	PLATE (3-1), ADJUSTMENT		325	1-464-503-41	S COIL SENSOR (L951)	
304	3-669-466-21	SCREW (M 2.6)		326	3-684-161-01	SPRING (S SENSOR), TENSION	
305	3-684-217-04	GUIDE (2), SHUTTLE		327	1-554-840-11	SWITCH, LEAF (THREADING END) (S952)	
306	*3-679-290-00	GUIDE (1-YA), SHUTTLE		328	*X-3684-130-1	ARM ASSY, LOCK	
307	A-6736-074-A	BASE BLOCK ASSY, SLANT		329	3-669-465-00	WASHER (1.5), STOPPER	
308	3-669-446-00	NUT, GUIDE, NO. 6		330	3-669-597-00	ROLLER (B), RING	
309	3-679-910-00	FLANGE (S), GUIDE, NUMBER 6		331	3-683-441-01	SPRING	
310	3-691-830-01	SLEEVE, GUIDE, #6		332	A-6759-344-A	ARM ASSY, PINCH ROLLER	
311	3-720-225-01	ROLLER (WEIGHT)		333	3-669-596-00	WASHER (2.3), STOPPER	
312	3-669-606-00	SCREW (2.6)		334	3-716-163-01	SCREW, FLANGE	
313	3-720-221-01	SPACER		335	3-676-650-00	FLANGE (UPPER) (#9), GUIDE	
314	3-721-333-01	SPRING, COMPRESSION		336	3-676-649-11	ROLLER (#9), GUIDE	
315	A-6750-227-A	SHUTTLE(6) BLOCK ASSY, THREADING		337	3-672-559-00	SLEEVE, GUIDE	
316	X-3684-178-1	RING (CF) ASSY, S THREADING		338	3-669-432-00	FLANGE (LOWER) (#9), GUIDE	
317	X-3669-430-0	HOLDER BLOCK ASSY, #3 GUIDE	317-321	339	3-693-941-01	SPRING (#9), COMPRESSION	
318	*A-6759-107-C	RETAINER, SPRING, LEAF		340	A-6750-235-A	GEAR ASSY, SLIDER	341, 342
319	3-672-586-00	SCREW (1.4X3), TAPPING		341	*X-3712-754-1	SLIDER BLOCK (3), T	
320	3-669-478-00	SCREW (1X3), TAPPING		342	3-549-014-00	SPRING, TENSION	
321	X-3669-429-0	HOLDER BLOCK ASSY, #2 GUIDE		343	3-701-437-71	WASHER	
322	3-669-476-04	PLATE, GUIDE					

5-8. DRUM ASSEMBLY



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
351	A-6050-517-A	DRUM ASSY (DCH-01A-R)	352-360	364	3-669-646-00	SPACER, DRUM	
352	*X-3669-106-0	DAMPER ASSY		365	*3-684-176-04	RECLINER, PIN	
353	A-6050-237-A	ARM ASSY, GUIDE		366	3-679-359-00	SPRING, COMPRESSION	
354	A-6760-241-A	DRUM ASSY, UPPER	355	367	X-3679-147-0	CHASSIS (B) ASSY, DRIVE GEAR	
355	A-6760-066-B	SPRING ASSY, TAPE RETAINER		368	3-669-595-00	WASHER (2), STOPPER	
356	X-3720-802-1	COUPLER ASSY, ROTARY		369	3-669-337-00	GEAR (D)	
357	A-6762-330-A	DISK ASSY		370	3-669-465-00	WASHER (1.5), STOPPER	
358	3-669-157-00	BOLT (WASHER) (2.6x8)		371	X-3679-148-0	GEAR (F) ASSY (D)	
359	*A-6760-250-A	FLANGE ASSY, LOWER DRUM		372	3-669-338-00	GEAR (E)	
360	X-3669-105-0	SPACER BLOCK ASSY		373	8-835-203-01	MOTOR, DC BHF-1914D (CAPSTAN) (M954)	
361	X-2621-228-1	STATOR ASSY, D		374	*3-720-248-01	COVER, DRUM HARNESS	
362	X-2621-202-0	ROTOR ASSY, D		375	3-669-600-11	WASHER, FLAT (3.5)	
363	*X-3712-730-1	CHASSIS ASSY, MECHANICAL	364	376	X-3693-838-1	SCREW ASSY, FITTING	

5-9. REEL BASE ASSEMBLY



Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
401	3-720-238-01	ARM, S SOFT BRAKE		421	X-2622-205-1	ROTOR ASSY, R	
402	3-720-216-01	SPRING, TENSION		422	3-679-318-00	WASHER, PENDULUM ARM	
403	X-3712-724-1	BRAKE ASSY, T SOFT		423	A-6759-074-P	ARM BLOCK ASSY, PENDULUM	
404	X-3684-107-1	BRAKE ASSY, SUPPLY		424	3-669-595-00	WASHER (2), STOPPER	
405	X-3684-108-1	BRAKE ASSY, TAKE-UP		425	 1-454-397-21	SOLENOID, PLUNGER (LIMIT) (PM953)	
406	3-720-239-01	ARM, PENDULUM STOPPER		426	*3-691-608-01	LIMITER, PL	
407	 1-454-396-21	SOLENOID, PLUNGER (BRAKE) (PM951)		427	3-691-787-01	SPRING, COMPRESSION	
408	*3-684-183-01	LINK, L		428	*3-691-607-01	FLANGE, PL	
409	X-3691-626-3	TABLE ASSY, REEL, TAKE-UP		429	*3-691-728-01	LEVER, RD	
410	*3-691-681-01	SHAFT, ARM, UD		430	3-691-775-01	SPRING, TENSION	
411	*3-691-650-01	ARM, UD		431	3-691-776-01	SPRING, TENSION	
412	3-691-606-01	RING, UD		432	*X-3691-601-3	ARM ASSY, RD	
413	X-3691-627-3	TABLE ASSY, REEL, SUPPLY		433	3-574-822-00	WASHER, STOPPER	
414	X-3684-121-1	LEVER ASSY, TENSION REGULATOR		434	1-571-023-11	SWITCH, LEAF (2 GANG) (CASSETTE DOWN/REC PROOF) (S951)	
415	3-679-151-00	SPRING, TENSION		435	X-3712-727-1	CHASSIS ASSY, SUB	
416	3-684-211-01	LEVER, FUNCTION		436	*1-624-074-11	RD-24 BOARD	
417	*3-691-694-01	LEVER, LIMITER		437	3-720-214-01	KNOB, DETECTION	
418	3-691-786-01	SPRING, TENSION		438	3-684-235-01	SPRING, TENSION	
419	X-3712-725-1	BAND ASSY, TENSION REGULATOR		439	*3-721-391-01	STOPPER, HARNESS	
420	A-4910-063-B	R STATOR (REEL MOTOR) BOARD, COMPLETE (M953)					

SECTION 6 ELCTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF: μ F, PF: μ MF.

RESISTORS

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORS

In each case, U: μ , for example:
 UA....: μ A..., UPA....: μ PA...,
 UPC....: μ PC, UPD....: μ PD...

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

R STATOR RP-51

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
	A-4910-063-B	R STATOR (REEL MOTOR) BOARD, COMPLETE		C022	1-163-035-00	CERAMIC CHIP 0.047MF	50V
		*****		C023	1-124-236-00	ELECT 47MF	20% 10V
	*1-560-460-00	PIN, CONNECTOR 4P		C024	1-163-035-00	CERAMIC CHIP 0.047MF	50V
	*1-560-461-00	PIN, CONNECTOR 5P		C025	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		CAPACITOR		C026	1-124-236-00	ELECT 47MF	20% 10V
C1	1-124-236-00	ELECT 47MF	20% 16V	C027	1-124-236-00	ELECT 47MF	20% 10V
C2	1-124-236-00	ELECT 47MF	20% 16V	C028	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C3	1-124-236-00	ELECT 47MF	20% 16V	C029	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C4	1-124-236-00	ELECT 47MF	20% 16V	C030	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		DIODE		C031	1-163-021-00	CERAMIC CHIP 0.01MF	50V
H1	8-719-800-18	DIODE THS103A		C032	1-163-021-00	CERAMIC CHIP 0.01MF	50V
H2	8-719-800-18	DIODE THS103A		C033	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		IC		C034	1-163-099-00	CERAMIC CHIP 18PF	5% 50V
IC1	Δ 8-759-801-97	IC LB1615		C035	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		RESISTOR		C036	1-163-021-00	CERAMIC CHIP 0.01MF	50V
R1	1-249-413-11	CARBON 470 5% 1/4W		C037	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
R2	1-249-429-11	CARBON 10K 5% 1/4W		C038	1-136-017-00	CERAMIC CHIP 0.0047MF	50V
R3	1-249-437-11	CARBON 47K 5% 1/4W		C039	1-163-021-00	CERAMIC CHIP 0.01MF	50V
R4	1-249-437-11	CARBON 47K 5% 1/4W		C040	1-136-017-00	CERAMIC CHIP 0.0047MF	50V
R5	1-249-437-11	CARBON 47K 5% 1/4W		C041	1-163-021-00	CERAMIC CHIP 0.01MF	50V
R6	1-249-437-11	CARBON 47K 5% 1/4W		C042	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		*****		C043	1-163-021-00	CERAMIC CHIP 0.01MF	50V
	*A-6711-856-A	RP-51 BOARD, COMPLETE		C044	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		*****		C045	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		CAPACITOR		C046	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C001	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C047	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C002	1-163-093-00	CERAMIC CHIP 10PF	5% 50V	C048	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C003	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C049	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C004	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C050	1-124-236-00	ELECT 47MF	20% 10V
C005	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C051	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C007	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C052	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C008	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C053	1-163-105-00	CERAMIC CHIP 33PF	5% 50V
C009	1-163-093-00	CERAMIC CHIP 10PF	5% 50V	C054	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C010	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C055	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C011	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C056	1-124-465-00	ELECT 0.47MF	20% 50V
C012	1-124-236-00	ELECT 47MF	20% 10V	C057	1-124-245-00	ELECT 4.7MF	20% 25V
C013	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C058	1-124-236-00	ELECT 47MF	20% 10V
C014	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C059	1-124-236-00	ELECT 47MF	20% 10V
C015	1-163-035-00	CERAMIC CHIP 0.047MF	50V	C060	1-124-465-00	ELECT 0.47MF	20% 50V
C016	1-124-236-00	ELECT 47MF	20% 10V	C061	1-124-245-00	ELECT 4.7MF	20% 25V
C017	1-163-035-00	CERAMIC CHIP 0.047MF	50V	C062	1-124-245-00	ELECT 4.7MF	20% 25V
C018	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C063	1-163-101-00	CERAMIC CHIP 22PF	5% 50V
C019	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C064	1-163-101-00	CERAMIC CHIP 22PF	5% 50V
C020	1-124-236-00	ELECT 47MF	20% 10V	C065	1-124-236-00	ELECT 47MF	20% 10V
C021	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C066	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		*****		C067	1-124-236-00	ELECT 47MF	20% 10V
		*****		C068	1-163-035-00	CERAMIC CHIP 0.047MF	50V
		*****		C069	1-136-017-00	CERAMIC CHIP 0.0047MF	50V
		*****		C070	1-136-017-00	CERAMIC CHIP 0.0047MF	50V
		*****		C071	1-124-236-00	ELECT 47MF	20% 10V
		*****		C072	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		*****		C073	1-163-021-00	CERAMIC CHIP 0.01MF	50V
		*****		C074	1-163-021-00	CERAMIC CHIP 0.01MF	50V

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C075	1-163-093-00	CERAMIC CHIP 10PF	5%	Q010	8-729-100-66	TRANSISTOR 2SC1623	
C076	1-163-035-00	CERAMIC CHIP 0.047MF	50V	Q011	8-729-122-63	TRANSISTOR 2SA1226	
C077	1-163-035-00	CERAMIC CHIP 0.047MF	50V	Q012	8-729-600-08	TRANSISTOR 2SK381-E	
C078	1-163-035-00	CERAMIC CHIP 0.047MF	50V	Q013	8-729-600-08	TRANSISTOR 2SK381-E	
C079	1-163-035-00	CERAMIC CHIP 0.047MF	50V	Q014	8-729-100-66	TRANSISTOR 2SC1623	
C080	1-124-236-00	ELECT 47MF	20%	Q015	8-729-100-66	TRANSISTOR 2SC1623	
C081	1-124-462-00	ELECT 10MF	20%	Q016	8-729-901-00	TRANSISTOR DTC124EK	
C082	1-124-462-00	ELECT 10MF	20%	Q017	8-729-901-00	TRANSISTOR DTC124EK	
C083	1-163-035-00	CERAMIC CHIP 0.047MF	50V	Q018	8-729-100-66	TRANSISTOR 2SC1623	
C084	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q019	8-729-100-66	TRANSISTOR 2SC1623	
<u>CONNECTOR</u>				Q020	8-729-100-66	TRANSISTOR 2SC1623	
CN001	*1-564-031-00	PIN, CONNECTOR 6P		Q021	8-729-901-00	TRANSISTOR DTC124EK	
CN002	*1-564-027-00	PIN, CONNECTOR 2P		Q022	8-729-901-00	TRANSISTOR DTC124EK	
CN003	*1-564-029-00	PIN, CONNECTOR 4P		Q023	8-729-901-01	TRANSISTOR DTC144EK	
CN004	*1-560-898-00	PIN, CONNECTOR 10P		<u>RESISTOR</u>			
CN005	*1-560-895-00	PIN, CONNECTOR 7P		R001	1-216-049-00	METAL GLAZE 1K	5% 1/10W
<u>DIODE</u>				R002	1-216-041-00	METAL GLAZE 470	5% 1/10W
D001	8-719-118-29	DIODE 1SS220		R003	1-216-057-00	METAL GLAZE 2.2K	5% 1/10W
D002	8-719-118-29	DIODE 1SS220		R004	1-216-063-00	METAL GLAZE 3.9K	5% 1/10W
D003	8-719-118-29	DIODE 1SS220		R005	1-216-089-00	METAL GLAZE 47K	5% 1/10W
D004	8-719-118-29	DIODE 1SS220		R006	1-216-094-00	METAL GLAZE 75K	5% 1/10W
<u>IC</u>				R007	1-216-089-00	METAL GLAZE 47K	5% 1/10W
IC001	8-752-031-07	IC CXA1091M		R008	1-216-041-00	METAL GLAZE 470	5% 1/10W
IC002	8-759-906-32	IC CX-893A		R009	1-216-041-00	METAL GLAZE 470	5% 1/10W
IC003	8-759-708-05	IC NJM78L05A		R010	1-216-094-00	METAL GLAZE 75K	5% 1/10W
<u>COIL</u>				R011	1-216-047-00	METAL GLAZE 820	5% 1/10W
L001	1-408-404-00	INDUCTOR 3.9UH		R012	1-216-041-00	METAL GLAZE 470	5% 1/10W
L002	1-408-404-00	INDUCTOR 3.9UH		R013	1-216-063-00	METAL GLAZE 3.9K	5% 1/10W
L003	1-410-437-11	INDUCTOR 330UH		R014	1-216-057-00	METAL GLAZE 2.2K	5% 1/10W
L004	1-410-437-11	INDUCTOR 330UH		R015	1-216-073-00	METAL GLAZE 10K	5% 1/10W
L005	1-408-421-00	INDUCTOR 100UH		R016	1-216-073-00	METAL GLAZE 10K	5% 1/10W
L006	1-408-413-00	INDUCTOR 22UH		R017	1-216-067-00	METAL GLAZE 5.6K	5% 1/10W
L007	1-408-421-00	INDUCTOR 100UH		R018	1-216-061-00	METAL GLAZE 3.3K	5% 1/10W
L008	1-408-408-00	INDUCTOR 8.2UH		R019	1-216-043-00	METAL GLAZE 560	5% 1/10W
L009	1-408-408-00	INDUCTOR 8.2UH		R020	1-216-047-00	METAL GLAZE 820	5% 1/10W
L010	1-408-411-00	INDUCTOR 15UH		R021	1-216-061-00	METAL GLAZE 3.3K	5% 1/10W
L011	1-408-421-00	INDUCTOR 100UH		R022	1-216-077-00	METAL GLAZE 15K	5% 1/10W
L012	1-410-334-11	INDUCTOR 100UH		R023	1-216-061-00	METAL GLAZE 3.3K	5% 1/10W
L013	1-410-334-11	INDUCTOR 100UH		R024	1-216-077-00	METAL GLAZE 15K	5% 1/10W
<u>TRANSISTOR</u>				R025	1-216-047-00	METAL GLAZE 820	5% 1/10W
Q001	8-729-103-72	TRANSISTOR 2SD1005		R026	1-216-049-00	METAL GLAZE 1K	5% 1/10W
Q002	8-729-800-43	TRANSISTOR 2SK152-3		R027	1-216-049-00	METAL GLAZE 1K	5% 1/10W
Q003	8-729-800-43	TRANSISTOR 2SK152-3		R028	1-216-065-00	METAL GLAZE 4.7K	5% 1/10W
Q004	8-729-103-72	TRANSISTOR 2SD1005		R029	1-216-061-00	METAL GLAZE 3.3K	5% 1/10W
Q005	8-729-904-51	TRANSISTOR DTB123EK		R030	1-216-077-00	METAL GLAZE 15K	5% 1/10W
Q006	8-729-901-01	TRANSISTOR DTC144EK		R031	1-216-049-00	METAL GLAZE 1K	5% 1/10W
Q007	8-729-100-66	TRANSISTOR 2SC1623		R032	1-216-049-00	METAL GLAZE 1K	5% 1/10W
Q008	8-729-100-66	TRANSISTOR 2SC1623		R033	1-216-065-00	METAL GLAZE 4.7K	5% 1/10W
Q009	8-729-901-01	TRANSISTOR DTC144EK		R034	1-216-073-00	METAL GLAZE 10K	5% 1/10W
				R035	1-216-041-00	METAL GLAZE 470	5% 1/10W
				R036	1-216-065-00	METAL GLAZE 4.7K	5% 1/10W
				R037	1-216-041-00	METAL GLAZE 470	5% 1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R038	1-216-025-00	METAL GLAZE 100 5% 1/10W		TRANSFORMER			
R039	1-216-049-00	METAL GLAZE 1K 5% 1/10W		T001	1-427-587-11	TRANSFORMER (I/O)	
R040	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W		T002	1-427-587-11	TRANSFORMER (I/O)	
R041	1-216-085-00	METAL GLAZE 33K 5% 1/10W		*****			
R042	1-216-089-00	METAL GLAZE 47K 5% 1/10W		*A-6711-946-A VE-1 BOARD, COMPLETE			
R043	1-216-049-00	METAL GLAZE 1K 5% 1/10W		*****			
R044	1-216-073-00	METAL GLAZE 10K 5% 1/10W		(Including the VE-3 BOARD)			
R045	1-216-041-00	METAL GLAZE 470 5% 1/10W		*2-522-807-11 RETAINER (B), MICROPHONE			
R046	1-216-039-00	METAL GLAZE 390 5% 1/10W		CAPACITOR			
R047	1-216-049-00	METAL GLAZE 1K 5% 1/10W		C001	1-124-446-11	ELECT 47MF 20% 10V	
R048	1-216-041-00	METAL GLAZE 470 5% 1/10W		C002	1-124-473-11	ELECT 1000MF 20% 10V	
R049	1-216-025-00	METAL GLAZE 100 5% 1/10W		C003	1-124-446-11	ELECT 47MF 20% 10V	
R050	1-216-049-00	METAL GLAZE 1K 5% 1/10W		C004	1-124-446-11	ELECT 47MF 20% 10V	
R051	1-216-039-00	METAL GLAZE 390 5% 1/10W		C005	1-124-473-11	ELECT 1000MF 20% 10V	
R052	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W		C006	1-124-446-11	ELECT 47MF 20% 10V	
R053	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W		C007	1-124-446-11	ELECT 47MF 20% 10V	
R054	1-216-094-00	METAL GLAZE 75K 5% 1/10W		C008	1-124-446-11	ELECT 47MF 20% 10V	
R055	1-216-081-00	METAL GLAZE 22K 5% 1/10W		C009	1-124-446-11	ELECT 47MF 20% 10V	
R057	1-216-081-00	METAL GLAZE 22K 5% 1/10W		C011	1-123-875-11	ELECT 10MF 20% 50V	
R059	1-216-093-00	METAL GLAZE 68K 5% 1/10W		C012	1-102-973-00	CERAMIC 100PF 5% 50V	
R061	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W		C013	1-102-978-00	CERAMIC 220PF 5% 50V	
R063	1-216-049-00	METAL GLAZE 1K 5% 1/10W		C014	1-124-499-11	ELECT 1MF 20% 50V	
R064	1-216-295-00	METAL GLAZE 0 5% 1/10W		C015	1-123-875-11	ELECT 10MF 20% 50V	
R065	1-216-049-00	METAL GLAZE 1K 5% 1/10W		C016	1-161-057-00	CERAMIC 0.033MF 10% 50V	
R066	1-216-049-00	METAL GLAZE 1K 5% 1/10W		C017	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
R067	1-216-089-00	METAL GLAZE 47K 5% 1/10W		C018	1-161-772-11	CERAMIC 0.1MF 10% 25V	
R068	1-216-089-00	METAL GLAZE 47K 5% 1/10W		C019	1-101-888-00	CERAMIC 68PF 5% 50V	
R070	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		C020	1-123-382-00	ELECT 3.3MF 20% 50V	
R071	1-216-089-00	METAL GLAZE 47K 5% 1/10W		C021	1-161-051-00	CERAMIC 0.01MF 10% 50V	
R072	1-216-089-00	METAL GLAZE 47K 5% 1/10W		C022	1-102-824-00	CERAMIC 470PF 5% 50V	
R073	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		C023	1-124-473-11	ELECT 1000MF 20% 10V	
R074	1-216-027-00	METAL GLAZE 120 5% 1/10W		C024	1-124-477-11	ELECT 47MF 20% 16V	
R075	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W		C025	1-101-059-00	CERAMIC 510PF 5% 50V	
R076	1-216-027-00	METAL GLAZE 120 5% 1/10W		C026	1-161-059-00	CERAMIC 0.047MF 10% 50V	
R077	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W		C027	1-124-446-11	ELECT 47MF 20% 10V	
R078	1-216-045-00	METAL GLAZE 680 5% 1/10W		C028	1-161-051-00	CERAMIC 0.01MF 10% 50V	
R079	1-216-045-00	METAL GLAZE 680 5% 1/10W		C029	1-124-473-11	ELECT 1000MF 20% 10V	
R080	1-216-097-00	METAL GLAZE 100K 5% 1/10W		C030	1-124-446-11	ELECT 47MF 20% 10V	
R081	1-216-097-00	METAL GLAZE 100K 5% 1/10W		C031	1-124-482-11	ELECT 33MF 20% 25V	
R082	1-216-097-00	METAL GLAZE 100K 5% 1/10W		C032	1-124-482-11	ELECT 33MF 20% 25V	
R083	1-216-097-00	METAL GLAZE 100K 5% 1/10W		C033	1-102-966-00	CERAMIC 43PF 5% 50V	
R084	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W		C034	1-123-875-11	ELECT 10MF 20% 50V	
R085	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W		C035	1-161-051-00	CERAMIC 0.01MF 10% 50V	
R086	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W		C036	1-124-477-11	ELECT 47MF 20% 16V	
VARIABLE RESISTOR				C037	1-161-059-00	CERAMIC 0.047MF 10% 50V	
RV001	1-230-719-11	RES, ADJ, CARBON 2.2K		C038	1-123-875-11	ELECT 10MF 20% 50V	
RV002	1-230-719-11	RES, ADJ, CARBON 2.2K		C039	1-124-482-11	ELECT 33MF 20% 25V	
RV003	1-230-719-11	RES, ADJ, CARBON 2.2K		C040	1-124-908-11	ELECT 22MF 20% 25V	
RV004	1-230-718-11	RES, ADJ, CARBON 1K		C042	1-124-477-11	ELECT 47MF 20% 16V	
RV005	1-230-719-11	RES, ADJ, CARBON 2.2K					

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C043	1-161-051-00	CERAMIC	0.01MF 10% 50V	C500	1-124-477-11	ELECT	47MF 20% 16V
C044	1-123-875-11	ELECT	10MF 20% 50V	C501	1-124-477-11	ELECT	47MF 20% 16V
C045	1-123-875-11	ELECT	10MF 20% 50V	C602	1-124-446-11	ELECT	47MF 20% 10V
C046	1-102-973-00	CERAMIC	100PF 5% 50V	C603	1-124-477-11	ELECT	47MF 20% 16V
C047	1-102-963-00	CERAMIC	33PF 5% 50V	C605	1-161-051-00	CERAMIC	0.01MF 10% 25V
C048	1-102-963-00	CERAMIC	33PF 5% 50V	C608	1-124-477-11	ELECT	47MF 20% 16V
C049	1-126-101-11	ELECT	100MF 20% 16V	C700	1-102-973-00	CERAMIC	100PF 5% 50V
C050	1-161-051-00	CERAMIC	0.01MF 10% 50V	C701	1-161-772-11	CERAMIC	0.1MF 10% 25V
C051	1-124-472-11	ELECT	470MF 20% 10V	C702	1-161-772-11	CERAMIC	0.1MF 10% 25V
C052	1-124-477-11	ELECT	47MF 20% 16V	C802	1-136-573-11	FILM	0.0056MF 10% 400V
C053	1-161-051-00	CERAMIC	0.01MF 10% 50V	C804	1-107-169-00	MICA	100PF 5% 500V
C054	1-161-059-00	CERAMIC	0.047MF 10% 50V	C805	1-130-483-00	MYLAR	0.01MF 5% 50V
C055	1-124-908-11	ELECT	22MF 20% 25V	C806	1-130-473-00	MYLAR	0.0015MF 5% 50V
C056	1-161-059-00	CERAMIC	0.047MF 10% 50V	C807	1-124-477-11	ELECT	47MF 20% 16V
C059	1-126-101-11	ELECT	100MF 20% 16V	C900	1-124-927-11	ELECT	4.7MF 20% 50V
C060	1-161-059-00	CERAMIC	0.047MF 10% 50V	C903	1-124-446-11	ELECT	47MF 20% 10V
C061	1-123-875-11	ELECT	10MF 20% 50V	C904	1-124-446-11	ELECT	47MF 20% 10V
C062	1-124-477-11	ELECT	47MF 20% 16V	C905	1-124-477-11	ELECT	47MF 20% 16V
C200	1-161-051-00	CERAMIC	0.01MF 10% 50V	C906	1-130-475-00	MYLAR	0.0022MF 5% 50V
C201	1-161-051-00	CERAMIC	0.01MF 10% 50V	C907	1-124-499-11	ELECT	1MF 20% 50V
C202	1-161-059-00	CERAMIC	0.047MF 10% 50V	C908	1-124-902-00	ELECT	0.47MF 20% 50V
C203	1-161-051-00	CERAMIC	0.01MF 10% 50V	C909	1-130-477-00	MYLAR	0.0033MF 5% 50V
C204	1-161-051-00	CERAMIC	0.01MF 10% 50V	C910	1-124-499-11	ELECT	1MF 20% 50V
C205	1-161-051-00	CERAMIC	0.01MF 10% 50V	C911	1-124-902-00	ELECT	0.47MF 20% 50V
C206	1-161-051-00	CERAMIC	0.01MF 10% 50V	C912	1-130-468-00	MYLAR	560PF 5% 50V
C207	1-124-477-11	ELECT	47MF 20% 16V	C913	1-124-908-11	ELECT	22MF 20% 50V
C208	1-136-163-00	MYLAR	0.068MF 10% 50V	C914	1-124-446-11	ELECT	47MF 20% 10V
C209	1-124-499-11	ELECT	1MF 20% 50V	C915	1-130-486-00	MYLAR	0.018MF 5% 50V
C210	1-130-469-00	MYLAR	680PF 10% 50V	C916	1-124-499-11	ELECT	1MF 20% 50V
C211	1-124-471-00	ELECT	1000MF 20% 6.3V	C918	1-124-252-00	ELECT	0.33MF 20% 50V
C212	1-102-074-00	CERAMIC	0.001MF 10% 50V	C920	1-124-499-11	ELECT	1MF 20% 50V
C213	1-161-059-00	CERAMIC	0.047MF 10% 50V	C921	1-130-488-00	MYLAR	0.027MF 5% 50V
C214	1-161-059-00	CERAMIC	0.047MF 10% 50V	C922	1-124-908-11	ELECT	22MF 20% 50V
C215	1-124-471-00	ELECT	1000MF 20% 6.3V	C923	1-130-484-00	MYLAR	0.012MF 5% 50V
C216	1-126-101-11	ELECT	100MF 20% 16V	C924	1-124-446-11	ELECT	47MF 20% 10V
C217	1-161-051-00	CERAMIC	0.01MF 10% 50V	C925	1-124-927-11	ELECT	4.7MF 20% 50V
C218	1-161-051-00	CERAMIC	0.01MF 10% 50V	C926	1-130-495-00	MYLAR	0.1MF 5% 50V
C219	1-124-927-11	ELECT	4.7MF 20% 50V	C928	1-130-485-00	MYLAR	0.015MF 5% 50V
C220	1-102-973-00	CERAMIC	100PF 5% 50V	C929	1-130-482-00	MYLAR	0.0082MF 5% 50V
C222	1-102-947-00	CERAMIC	10PF 0.5PF 50V	C951	1-130-472-00	MYLAR	0.0012MF 5% 50V
C224	1-161-059-00	CERAMIC	0.047MF 10% 50V	C952	1-102-980-00	CERAMIC	270PF 5% 50V
C225	1-162-282-31	CERAMIC	100PF 10% 50V	CONNECTOR			
C300	1-161-059-00	CERAMIC	0.047MF 10% 50V	CN001	*1-564-006-11	PIN, CONNECTOR	7P
C301	1-126-101-11	ELECT	100MF 20% 16V	CN002	*1-560-891-00	PIN, CONNECTOR	3P
C302	1-124-477-11	ELECT	47MF 20% 16V	CN003	*1-560-893-00	PIN, CONNECTOR	5P
C303	1-161-051-00	CERAMIC	0.01MF 10% 25V	CN004	*1-560-895-00	PIN, CONNECTOR	7P
C304	1-102-953-00	CERAMIC	18PF 5% 50V	CN005	*1-560-892-00	PIN, CONNECTOR	4P
C305	1-161-051-00	CERAMIC	0.01MF 10% 25V	CN006	*1-560-894-00	PIN, CONNECTOR	6P
C306	1-161-051-00	CERAMIC	0.01MF 10% 25V	CN007	*1-560-896-00	PIN, CONNECTOR	8P
C310	1-101-880-00	CERAMIC	47PF 5% 50V	CN008	*1-560-896-00	PIN, CONNECTOR	8P
C311	1-102-129-00	CERAMIC	0.01MF 10% 50V	CN009	*1-560-893-00	PIN, CONNECTOR	5P
C312	1-161-051-00	CERAMIC	0.01MF 10% 25V	CN010	*1-560-892-00	PIN, CONNECTOR	4P
C313	1-124-477-11	ELECT	47MF 20% 16V				

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
RESISTOR							
R001	1-249-429-11	CARBON	10K 5% 1/4W	R056	1-249-408-11	CARBON	180 5% 1/4W
R002	1-249-429-11	CARBON	10K 5% 1/4W	R057	1-249-437-11	CARBON	47K 5% 1/4W
R003	1-249-421-11	CARBON	2.2K 5% 1/4W	R058	1-249-414-11	CARBON	560 5% 1/4W
R004	1-249-441-11	CARBON	100K 5% 1/4W	R059	1-249-414-11	CARBON	560 5% 1/4W
R005	1-249-438-11	CARBON	56K 5% 1/4W	R060	1-249-421-11	CARBON	2.2K 5% 1/4W
R006	1-247-883-00	CARBON	150K 5% 1/4W	R061	1-249-417-11	CARBON	1K 5% 1/4W
R007	1-249-417-11	CARBON	1K 5% 1/4W	R062	1-249-431-11	CARBON	15K 5% 1/4W
R008	1-249-417-11	CARBON	1K 5% 1/4W	R063	1-249-425-11	CARBON	4.7K 5% 1/4W
R009	1-249-439-11	CARBON	68K 5% 1/4W	R064	1-247-836-11	CARBON	1.6K 5% 1/4W
R010	1-249-413-11	CARBON	470 5% 1/4W	R065	1-249-415-11	CARBON	680 5% 1/4W
R011	1-249-417-11	CARBON	1K 5% 1/4W	R066	1-249-413-11	CARBON	470 5% 1/4W
R012	1-249-429-11	CARBON	10K 5% 1/4W	R067	1-249-411-11	CARBON	330 5% 1/4W
R013	1-247-893-11	CARBON	390K 5% 1/4W	R076	1-249-429-11	CARBON	10K 5% 1/4W
R014	1-247-895-00	CARBON	470K 5% 1/4W	R077	1-247-891-00	CARBON	330K 5% 1/4W
R015	1-249-429-11	CARBON	10K 5% 1/4W	R078	1-247-891-00	CARBON	330K 5% 1/4W
R016	1-249-436-11	CARBON	39K 5% 1/4W	R200	1-249-436-11	CARBON	39K 5% 1/4W
R017	1-249-430-11	CARBON	12K 5% 1/4W	R201	1-249-437-11	CARBON	47K 5% 1/4W
R018	1-249-425-11	CARBON	4.7K 5% 1/4W	R202	1-249-435-11	CARBON	33K 5% 1/4W
R019	1-249-429-11	CARBON	10K 5% 1/4W	R203	1-249-437-11	CARBON	47K 5% 1/4W
R020	1-249-437-11	CARBON	47K 5% 1/4W	R204	1-249-435-11	CARBON	33K 5% 1/4W
R021	1-249-423-11	CARBON	3.3K 5% 1/4W	R205	1-249-437-11	CARBON	47K 5% 1/4W
R022	1-249-429-11	CARBON	10K 5% 1/4W	R206	1-249-429-11	CARBON	10K 5% 1/4W
R023	1-249-431-11	CARBON	15K 5% 1/4W	R207	1-249-429-11	CARBON	10K 5% 1/4W
R024	1-249-429-11	CARBON	10K 5% 1/4W	R208	1-249-414-11	CARBON	560 5% 1/4W
R025	1-249-423-11	CARBON	3.3K 5% 1/4W	R209	1-249-437-11	CARBON	47K 5% 1/4W
R026	1-249-431-11	CARBON	15K 5% 1/4W	R210	1-249-421-11	CARBON	2.2K 5% 1/4W
R027	1-249-429-11	CARBON	10K 5% 1/4W	R211	1-249-437-11	CARBON	47K 5% 1/4W
R028	1-249-419-11	CARBON	1.5K 5% 1/4W	R212	1-249-429-11	CARBON	10K 5% 1/4W
R029	1-249-417-11	CARBON	1K 5% 1/4W	R213	1-249-441-11	CARBON	100K 5% 1/4W
R030	1-249-423-11	CARBON	3.3K 5% 1/4W	R214	1-249-415-11	CARBON	680 5% 1/4W
R031	1-249-431-11	CARBON	15K 5% 1/4W	R215	1-249-427-11	CARBON	6.8K 5% 1/4W
R032	1-249-418-11	CARBON	1.2K 5% 1/4W	R216	1-249-435-11	CARBON	33K 5% 1/4W
R033	1-249-417-11	CARBON	1K 5% 1/4W	R217	1-249-415-11	CARBON	680 5% 1/4W
R034	1-249-418-11	CARBON	1.2K 5% 1/4W	R218	1-249-431-11	CARBON	15K 5% 1/4W
R035	1-249-423-11	CARBON	3.3K 5% 1/4W	R219	1-249-425-11	CARBON	4.7K 5% 1/4W
R036	1-249-427-11	CARBON	6.8K 5% 1/4W	R220	1-249-420-11	CARBON	1.8K 5% 1/4W
R039	1-249-429-11	CARBON	10K 5% 1/4W	R221	1-249-415-11	CARBON	680 5% 1/4W
R040	1-249-418-11	CARBON	1.2K 5% 1/4W	R222	1-249-413-11	CARBON	470 5% 1/4W
R041	1-249-429-11	CARBON	10K 5% 1/4W	R225	1-249-418-11	CARBON	1.2K 5% 1/4W
R042	1-249-419-11	CARBON	1.5K 5% 1/4W	R226	1-249-438-11	CARBON	56K 5% 1/4W
R043	1-249-423-11	CARBON	3.3K 5% 1/4W	R300	1-249-429-11	CARBON	10K 5% 1/4W
R046	1-249-417-11	CARBON	1K 5% 1/4W	R303	1-249-437-11	CARBON	47K 5% 1/4W
R047	1-249-413-11	CARBON	470 5% 1/4W	R304	1-249-431-11	CARBON	15K 5% 1/4W
R048	1-249-417-11	CARBON	1K 5% 1/4W	R305	1-249-429-11	CARBON	10K 5% 1/4W
R049	1-249-430-11	CARBON	12K 5% 1/4W	R306	1-249-437-11	CARBON	47K 5% 1/4W
R050	1-249-424-11	CARBON	3.9K 5% 1/4W	R307	1-249-429-11	CARBON	10K 5% 1/4W
R051	1-249-441-11	CARBON	100K 5% 1/4W	R310	1-249-437-11	CARBON	47K 5% 1/4W
R052	1-249-424-11	CARBON	3.9K 5% 1/4W	R701	1-247-891-00	CARBON	330K 5% 1/4W
R053	1-247-838-00	CARBON	2K 5% 1/4W	R702	1-247-903-00	CARBON	1M 5% 1/4W
R054	1-249-437-11	CARBON	47K 5% 1/4W	R703	1-249-433-11	CARBON	22K 5% 1/4W
R055	1-249-411-11	CARBON	330 5% 1/4W	R704	1-249-435-11	CARBON	33K 5% 1/4W
				R705	1-249-433-11	CARBON	22K 5% 1/4W
				R706	1-247-903-00	CARBON	1M 5% 1/4W

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R801	1-249-425-11	CARBON	4.7K 5% 1/4W	R990	1-249-433-11	CARBON	22K 5% 1/4W
R802	1-249-425-11	CARBON	4.7K 5% 1/4W	R991	1-249-432-11	CARBON	18K 5% 1/4W
R803	1-249-441-11	CARBON	100K 5% 1/4W	R992	1-247-887-00	CARBON	220K 5% 1/4W
R805	1-249-433-11	CARBON	22K 5% 1/4W	<u>VARIABLE RESISTOR</u>			
R806	1-249-429-11	CARBON	10K 5% 1/4W	RV001	1-228-996-00	RES, ADJ, CARBON 47K	
R807	1-249-453-11	CARBON	3.3 5% 1/4W F	RV002	1-228-995-00	RES, ADJ, CARBON 22K	
R808	1-247-733-11	CARBON	33 5% 1/2W	RV200	1-228-996-00	RES, ADJ, CARBON 47K	
R809	1-249-425-11	CARBON	4.7K 5% 1/4W	RV201	1-228-994-00	RES, ADJ, CARBON 10K	
R810	1-249-425-11	CARBON	4.7K 5% 1/4W	RV802	1-224-134-XX	RES, ADJ, METAL GLAZE 470K	
R902	1-249-437-11	CARBON	47K 5% 1/4W	RV901	1-228-996-00	RES, ADJ, CARBON 47K	
R903	1-249-405-11	CARBON	100 5% 1/4W	<u>RELAY</u>			
R904	1-249-409-11	CARBON	220 5% 1/4W	RY801	1-515-529-11	RELAY	
R905	1-249-437-11	CARBON	47K 5% 1/4W	<u>TRANSFORMER</u>			
R906	1-249-437-11	CARBON	47K 5% 1/4W	T801	1-433-330-11	TRANSFORMER, BIAS OSCILLATION	
R907	1-249-429-11	CARBON	10K 5% 1/4W	*****			
R908	1-249-407-11	CARBON	150 5% 1/4W	*1-627-292-11	VE-3 BOARD		
R909	1-249-425-11	CARBON	4.7K 5% 1/4W	*****			
R910	1-249-429-11	CARBON	10K 5% 1/4W	<u>DIODE</u>			
R911	1-249-441-11	CARBON	100K 5% 1/4W	D001	8-719-911-19	DIODE 1SS119	
R912	1-249-425-11	CARBON	4.7K 5% 1/4W	D002	8-719-911-19	DIODE 1SS119	
R913	1-249-441-11	CARBON	100K 5% 1/4W	D003	8-719-911-19	DIODE 1SS119	
R914	1-249-429-11	CARBON	10K 5% 1/4W	<u>TRANSISTOR</u>			
R915	1-249-409-11	CARBON	220 5% 1/4W	Q001	8-729-900-80	TRANSISTOR DTC114ES	
R916	1-249-425-11	CARBON	4.7K 5% 1/4W	Q002	8-729-900-80	TRANSISTOR DTC114ES	
R918	1-249-425-11	CARBON	4.7K 5% 1/4W	<u>RESISTOR</u>			
R919	1-249-429-11	CARBON	10K 5% 1/4W	R001	1-249-430-11	CARBON	12K 5% 1/4W
R920	1-249-422-11	CARBON	2.7K 5% 1/4W	*****			
R921	1-249-429-11	CARBON	10K 5% 1/4W	*A-6711-947-A	DI-6 BOARD, COMPLETE		
R922	1-249-414-11	CARBON	560 5% 1/4W	*****			
R923	1-249-422-11	CARBON	2.7K 5% 1/4W	*2-522-807-11	RETAINER (B), MICROPHONE		
R924	1-249-438-11	CARBON	56K 5% 1/4W	<u>CAPACITOR</u>			
R925	1-249-413-11	CARBON	470 5% 1/4W	C001	1-101-004-00	CERAMIC	0.01MF 50V
R926	1-247-903-00	CARBON	1M 5% 1/4W	C004	1-130-469-00	MYLAR	680PF 5% 50V
R927	1-249-435-11	CARBON	33K 5% 1/4W	C005	1-130-483-00	MYLAR	0.01MF 5% 50V
R928	1-249-435-11	CARBON	33K 5% 1/4W	C006	1-101-004-00	CERAMIC	0.01MF 50V
R930	1-249-405-11	CARBON	100 5% 1/4W	C007	1-101-004-00	CERAMIC	0.01MF 50V
R932	1-249-429-11	CARBON	10K 5% 1/4W	C008	1-123-611-00	ELECT	1MF 20% 50V
R933	1-249-437-11	CARBON	47K 5% 1/4W	C009	1-161-051-00	CERAMIC	0.01MF 10% 25V
R934	1-249-425-11	CARBON	4.7K 5% 1/4W	C010	1-124-236-00	ELECT	47MF 20% 10V
R935	1-249-437-11	CARBON	47K 5% 1/4W	C011	1-123-611-00	ELECT	1MF 20% 50V
R936	1-249-425-11	CARBON	4.7K 5% 1/4W	C012	1-130-483-00	MYLAR	0.01MF 5% 50V
R937	1-249-425-11	CARBON	4.7K 5% 1/4W				
R938	1-249-437-11	CARBON	47K 5% 1/4W				
R939	1-249-425-11	CARBON	4.7K 5% 1/4W				
R940	1-249-437-11	CARBON	47K 5% 1/4W				
R941	1-249-405-11	CARBON	100 5% 1/4W				
R942	1-249-408-11	CARBON	180 5% 1/4W				
R943	1-249-429-11	CARBON	10K 5% 1/4W				
R944	1-249-393-11	CARBON	10 5% 1/4W				
R945	1-249-425-11	CARBON	4.7K 5% 1/4W				
R950	1-249-429-11	CARBON	10K 5% 1/4W				
R951	1-249-429-11	CARBON	10K 5% 1/4W				
R969	1-249-429-11	CARBON	10K 5% 1/4W				

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C013	1-130-471-00	MYLAR	0.001MF 5% 50V	C220	1-126-101-11	ELECT	100MF 20% 16V
C014	1-102-947-00	CERAMIC	10PF 0.5PF 50V	C221	1-101-888-00	CERAMIC	68PF 5% 50V
C015	1-101-001-00	CERAMIC	0.001MF 50V	C301	1-101-004-00	CERAMIC	0.01MF 50V
C016	1-161-051-00	CERAMIC	0.01MF 10% 25V	C302	1-101-004-00	CERAMIC	0.01MF 50V
C017	1-124-236-00	ELECT	47MF 20% 10V	C303	1-101-004-00	CERAMIC	0.01MF 50V
C018	1-124-236-00	ELECT	47MF 20% 10V	C304	1-101-004-00	CERAMIC	0.01MF 50V
C019	1-101-001-00	CERAMIC	0.001MF 50V	C305	1-102-976-00	CERAMIC	180PF 5% 50V
C020	1-130-491-00	MYLAR	0.047MF 5% 50V	C307	1-124-257-00	ELECT	2.2MF 20% 50V
C021	1-130-491-00	MYLAR	0.047MF 5% 50V	C308	1-124-465-00	ELECT	0.47MF 20% 50V
C022	1-124-465-00	ELECT	0.47MF 20% 50V	C309	1-124-257-00	ELECT	2.2MF 20% 50V
C023	1-123-611-00	ELECT	1MF 20% 50V	C310	1-102-976-00	CERAMIC	180PF 5% 50V
C028	1-101-880-00	CERAMIC	47PF 5% 50V	C312	1-123-611-00	ELECT	1MF 20% 50V
C029	1-101-880-00	CERAMIC	47PF 5% 50V	C313	1-124-270-11	ELECT	0.47MF 20% 50V
C030	1-124-462-00	ELECT	10MF 20% 16V	C314	1-123-611-00	ELECT	1MF 20% 50V
C031	1-124-463-00	ELECT	0.1MF 20% 50V	C315	1-124-462-00	ELECT	10MF 20% 16V
C032	1-124-257-00	ELECT	2.2MF 20% 50V	C316	1-102-963-00	CERAMIC	33PF 5% 50V
C033	1-161-055-00	CERAMIC	0.022MF 10% 25V	C317	1-102-978-00	CERAMIC	220PF 5% 50V
C034	1-130-469-00	MYLAR	680PF 5% 50V	C318	1-101-004-00	CERAMIC	0.01MF 50V
C035	1-161-039-00	CERAMIC	0.001MF 10% 25V	C319	1-101-004-00	CERAMIC	0.01MF 50V
C036	1-124-462-00	ELECT	10MF 20% 16V	C322	1-161-051-00	CERAMIC	0.01MF 10% 25V
C037	1-130-468-00	MYLAR	560PF 5% 50V	C323	1-124-236-00	ELECT	47MF 20% 16V
C038	1-124-236-00	ELECT	47MF 20% 10V	C325	1-124-236-00	ELECT	47MF 20% 16V
C039	1-102-971-00	CERAMIC	82PF 5% 50V	C326	1-161-051-00	CERAMIC	0.01MF 10% 25V
C101	1-123-611-00	ELECT	1MF 20% 50V	C327	1-102-973-00	CERAMIC	100PF 5% 50V
C102	1-123-611-00	ELECT	1MF 20% 50V	C328	1-102-973-00	CERAMIC	100PF 5% 50V
C103	1-161-051-00	CERAMIC	0.01MF 10% 25V	C331	1-102-959-00	CERAMIC	22PF 5% 50V
C104	1-124-462-00	ELECT	10MF 20% 16V	C332	1-102-959-00	CERAMIC	22PF 5% 50V
C105	1-161-051-00	CERAMIC	0.01MF 10% 25V	C333	1-161-021-11	CERAMIC	0.047MF 10% 25V
C106	1-101-004-00	CERAMIC	0.01MF 50V	C334	1-161-021-11	CERAMIC	0.047MF 10% 25V
C107	1-124-236-00	ELECT	47MF 20% 10V	C501	1-161-051-00	CERAMIC	0.01MF 10% 25V
C108	1-161-051-00	CERAMIC	0.01MF 10% 25V	C502	1-161-051-00	CERAMIC	0.01MF 10% 25V
C109	1-124-236-00	ELECT	47MF 20% 10V	C503	1-161-051-00	CERAMIC	0.01MF 10% 25V
C110	1-130-491-00	MYLAR	0.047MF 5% 50V	C504	1-124-236-00	ELECT	47MF 20% 10V
C111	1-101-004-00	CERAMIC	0.01MF 50V	C505	1-161-051-00	CERAMIC	0.01MF 10% 25V
C113	1-124-444-00	ELECT	220MF 20% 10V	C506	1-124-236-00	ELECT	47MF 20% 10V
C114	1-161-051-00	CERAMIC	0.01MF 10% 25V	C507	1-161-051-00	CERAMIC	0.01MF 10% 25V
C115	1-102-953-00	CERAMIC	18PF 5% 50V	C508	1-102-963-00	CERAMIC	33PF 5% 50V
C116	1-102-945-00	CERAMIC	8PF 0.5PF 50V	C509	1-102-963-00	CERAMIC	33PF 5% 50V
C117	1-101-004-00	CERAMIC	0.01MF 50V	C510	1-102-074-00	CERAMIC	0.001MF 10% 50V
C118	1-161-051-00	CERAMIC	0.01MF 10% 25V	C511	1-102-074-00	CERAMIC	0.001MF 10% 50V
C119	1-124-462-00	ELECT	10MF 20% 16V	C512	1-123-611-00	ELECT	1MF 20% 50V
C120	1-130-491-00	MYLAR	0.047MF 5% 50V	C513	1-124-236-00	ELECT	47MF 20% 10V
C121	1-123-611-00	ELECT	1MF 20% 50V	C514	1-161-051-00	CERAMIC	0.01MF 10% 25V
C122	1-126-101-11	ELECT	100MF 20% 16V	C515	1-161-051-00	CERAMIC	0.01MF 10% 25V
C206	1-124-236-00	ELECT	47MF 20% 10V	C516	1-124-236-00	ELECT	47MF 20% 10V
C207	1-161-051-00	CERAMIC	0.01MF 10% 25V	C517	1-124-236-00	ELECT	47MF 20% 10V
C208	1-124-236-00	ELECT	47MF 20% 10V	C518	1-161-051-00	CERAMIC	0.01MF 10% 25V
C209	1-124-236-00	ELECT	47MF 20% 10V	C519	1-124-236-00	ELECT	47MF 20% 10V
C210	1-124-465-00	ELECT	0.47MF 20% 50V	C520	1-161-051-00	CERAMIC	0.01MF 10% 25V
C216	1-124-462-00	ELECT	10MF 20% 16V	C521	1-124-236-00	ELECT	47MF 20% 10V
C217	1-124-259-00	ELECT	4.7MF 20% 50V	C522	1-161-051-00	CERAMIC	0.01MF 10% 25V
C218	1-161-051-00	CERAMIC	0.01MF 10% 25V	C523	1-161-024-00	CERAMIC	0.082MF 10% 25V
C219	1-101-888-00	CERAMIC	68PF 5% 50V	C524	1-126-101-11	ELECT	100MF 20% 10V

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C525	1-161-024-00	CERAMIC	0.082MF 10% 25V	C901	1-161-051-00	CERAMIC	0.01MF 10% 25V
C526	1-161-021-11	CERAMIC	0.047MF 10% 25V	C902	1-161-051-00	CERAMIC	0.01MF 10% 25V
C527	1-124-236-00	ELECT	47MF 20% 10V	C903	1-161-051-00	CERAMIC	0.01MF 10% 25V
C528	1-123-611-00	ELECT	1MF 20% 50V	C904	1-161-051-00	CERAMIC	0.01MF 10% 25V
C529	1-123-611-00	ELECT	1MF 20% 50V	C905	1-161-051-00	CERAMIC	0.01MF 10% 25V
C530	1-124-236-00	ELECT	47MF 20% 10V	<u>CONNECTOR</u>			
C531	1-161-051-00	CERAMIC	0.01MF 10% 25V	CN001	*1-560-892-00	PIN, CONNECTOR 4P	
C532	1-123-611-00	ELECT	1MF 20% 50V	CN002	*1-560-894-00	PIN, CONNECTOR 6P	
C533	1-124-236-00	ELECT	47MF 20% 10V	CN003	*1-560-892-00	PIN, CONNECTOR 4P	
C534	1-161-051-00	CERAMIC	0.01MF 10% 25V	CN004	*1-564-006-11	PIN, CONNECTOR 7P	
C535	1-161-051-00	CERAMIC	0.01MF 10% 25V	CN005	*1-564-007-00	PIN, CONNECTOR 8P	
C536	1-123-611-00	ELECT	1MF 20% 50V	CN006	*1-564-008-00	PIN, CONNECTOR 9P	
C537	1-124-236-00	ELECT	47MF 20% 10V	<u>COMPOSITION CIRCUIT BLOCK</u>			
C538	1-161-051-00	CERAMIC	0.01MF 10% 25V	CP001	1-233-131-11	COMPOSITION CIRCUIT BLOCK	
C539	1-161-051-00	CERAMIC	0.01MF 10% 25V	<u>TRIMMER</u>			
C540	1-124-236-00	ELECT	47MF 20% 10V	CT003	1-141-245-00	TRIMMER, CERAMIC	
C541	1-123-661-00	ELECT	100MF 20% 6.3V	CT601	1-141-245-00	TRIMMER, CERAMIC	
C542	1-161-051-00	CERAMIC	0.01MF 10% 25V	<u>DIODE</u>			
C543	1-161-039-00	CERAMIC	0.001MF 10% 25V	D001	8-719-911-19	DIODE 1SS119	
C545	1-102-973-00	CERAMIC	100PF 5% 50V	D003	8-719-000-06	DIODE MC921	
C546	1-101-880-00	CERAMIC	47PF 5% 50V	D004	8-719-101-50	DIODE RD5.1EL2	
C552	1-161-021-11	CERAMIC	0.047MF 10% 25V	D101	8-719-911-19	DIODE 1SS119	
C553	1-102-824-00	CERAMIC	470PF 5% 50V	D502	8-719-911-19	DIODE 1SS119	
C554	1-101-361-00	CERAMIC	150PF 5% 50V	D503	8-719-911-19	DIODE 1SS119	
C555	1-102-973-00	CERAMIC	100PF 5% 50V	D504	8-719-911-19	DIODE 1SS119	
C556	1-102-820-00	CERAMIC	330PF 5% 50V	D505	8-719-000-06	DIODE MC921	
C557	1-124-236-00	ELECT	47MF 20% 10V	D601	8-719-300-00	DIODE 1T33	
C558	1-161-021-11	CERAMIC	0.047MF 10% 25V	D602	8-719-000-06	DIODE MC921	
C559	1-161-021-11	CERAMIC	0.047MF 10% 25V	D607	8-719-911-19	DIODE 1SS119	
C601	1-102-820-00	CERAMIC	330PF 5% 50V	D609	8-719-911-19	DIODE 1SS119	
C602	1-102-824-00	CERAMIC	470PF 5% 50V	D610	8-719-911-19	DIODE 1SS119	
C603	1-124-462-00	ELECT	10MF 20% 16V	<u>DELAY LINE</u>			
C604	1-161-020-11	CERAMIC	0.039MF 10% 25V	DL202	1-415-440-11	DELAY LINE, LC (444NS)	
C605	1-124-465-00	ELECT	0.47MF 20% 50V	DL203	1-415-443-11	Y-DL	
C606	1-124-465-00	ELECT	0.47MF 20% 50V	<u>FERRITE BEAD INDUCTOR</u>			
C607	1-101-888-00	CERAMIC	68PF 5% 50V	FB301	1-410-397-21	FERRITE BEAD INDUCTOR	
C608	1-102-971-00	CERAMIC	82PF 5% 50V	FB501	1-410-397-21	FERRITE BEAD INDUCTOR	
C609	1-102-973-00	CERAMIC	100PF 5% 50V	FB502	1-410-397-21	FERRITE BEAD INDUCTOR	
C610	1-102-973-00	CERAMIC	100PF 5% 50V	FB503	1-410-397-21	FERRITE BEAD INDUCTOR	
C611	1-124-236-00	ELECT	47MF 20% 16V	FB504	1-410-397-21	FERRITE BEAD INDUCTOR	
C612	1-161-039-00	CERAMIC	0.001MF 10% 25V	FB505	1-410-397-21	FERRITE BEAD INDUCTOR	
C613	1-102-947-00	CERAMIC	10PF 0.5PF 50V	FB508	1-410-397-21	FERRITE BEAD INDUCTOR	
C614	1-102-947-00	CERAMIC	10PF 0.5PF 50V	FB509	1-410-397-21	FERRITE BEAD INDUCTOR	
C615	1-124-229-00	ELECT	33MF 20% 10V	FB512	1-410-397-21	FERRITE BEAD INDUCTOR	
C622	1-161-051-00	CERAMIC	0.01MF 10% 25V	FB513	1-410-397-21	FERRITE BEAD INDUCTOR	
C623	1-124-236-00	ELECT	47MF 20% 10V	FB514	1-410-397-21	FERRITE BEAD INDUCTOR	
C625	1-130-471-00	MYLAR	0.001MF 5% 50V				
C626	1-130-471-00	MYLAR	0.001MF 5% 50V				
C630	1-102-973-00	CERAMIC	100PF 5% 50V				
C631	1-102-973-00	CERAMIC	100PF 5% 50V				
C632	1-124-236-00	ELECT	47MF 20% 16V				
C633	1-102-973-00	CERAMIC	100PF 5% 50V				
C634	1-101-888-00	CERAMIC	68PF 5% 50V				

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
FB515	1-410-397-21	FERRITE BEAD INDUCTOR		FL936	1-421-928-21	FILTER, NOISE	
FB516	1-410-397-21	FERRITE BEAD INDUCTOR				IC	
FB517	1-410-397-21	FERRITE BEAD INDUCTOR		IC001	8-759-605-38	IC M51279SP	
FB601	1-410-397-21	FERRITE BEAD INDUCTOR		IC002	8-759-701-96	IC NJM2217L	
FB602	1-410-397-21	FERRITE BEAD INDUCTOR		IC101	8-759-603-56	IC M51272FP	
				IC301	8-759-145-58	IC UPC4558C	
FB603	1-410-397-21	FERRITE BEAD INDUCTOR		IC302	8-759-007-21	IC MC74HC4053N	
FB901	1-410-397-21	FERRITE BEAD INDUCTOR					
FB902	1-410-397-21	FERRITE BEAD INDUCTOR		IC501	8-759-630-56	IC M65011FP-D	
FB903	1-410-397-21	FERRITE BEAD INDUCTOR		IC502	8-759-605-30	IC M50747-650FP	
FB904	1-410-397-21	FERRITE BEAD INDUCTOR		IC503	8-759-202-86	IC TC74HC123P	
				IC504	8-759-938-43	IC MB40578P	
FB905	1-410-397-21	FERRITE BEAD INDUCTOR		IC505	8-759-938-43	IC MB40578P	
FB906	1-410-397-21	FERRITE BEAD INDUCTOR					
FB907	1-410-397-21	FERRITE BEAD INDUCTOR		IC506	8-759-605-15	IC M5M4C500L-10	
				IC507	8-759-605-15	IC M5M4C500L-10	
				IC508	8-759-605-15	IC M5M4C500L-10	
				IC509	8-759-605-15	IC M5M4C500L-10	
				IC511	8-759-202-27	IC TC74HC157P	
				IC512	8-759-202-27	IC TC74HC157P	
				IC513	8-759-202-27	IC TC74HC157P	
				IC514	8-759-202-27	IC TC74HC157P	
				IC515	8-759-202-27	IC TC74HC157P	
				IC516	8-759-202-27	IC TC74HC157P	
				IC517	8-759-202-27	IC TC74HC157P	
				IC518	8-759-933-52	IC MB40778P	
				IC519	8-759-933-52	IC MB40778P	
				IC520	8-759-933-52	IC MB40778P	
				IC521	8-759-000-XX	IC TC74HC74P	
				IC522	8-759-202-14	IC TC74HC08P	
				IC601	8-759-007-40	IC TL082CP	
				IC602	8-759-202-74	IC TC74HC04P	
				IC603	8-759-202-27	IC TC74HC157P	
				IC604	8-759-000-49	IC MC14066BCP	
				IC605	1-808-110-11	IC HGA0801	
				IC606	8-759-202-27	IC TC74HC157P	
				IC607	8-759-202-86	IC TC74HC123P	
						COIL	
				L001	1-408-417-00	INDUCTOR 47UH	
				L003	1-408-429-00	INDUCTOR 470UH	
				L004	1-408-421-00	INDUCTOR 100UH	
				L101	1-408-421-00	INDUCTOR 100UH	
				L303	1-408-614-41	INDUCTOR 82UH	
				L304	1-408-407-00	INDUCTOR 6.8UH	
				L501	1-408-421-00	INDUCTOR 100UH	
				L601	1-408-397-00	INDUCTOR 1UH	
						VARIABLE COIL	
				LV601	1-410-932-11	COIL, VARIABLE 4.7UH	
						TRANSISTOR	
				Q001	8-729-178-54	TRANSISTOR 2SC2785	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
Q002	8-729-178-54	TRANSISTOR 2SC2785		Q515	8-729-900-89	TRANSISTOR DTC144ES	
Q005	8-729-900-89	TRANSISTOR DTC144ES		Q516	8-729-900-89	TRANSISTOR DTC144ES	
Q006	8-729-117-54	TRANSISTOR 2SA1175		Q601	8-729-178-54	TRANSISTOR 2SC2785	
Q007	8-729-900-89	TRANSISTOR DTC144ES		Q602	8-729-117-54	TRANSISTOR 2SA1175	
Q101	8-729-178-54	TRANSISTOR 2SC2785		Q603	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q201	8-729-178-54	TRANSISTOR 2SC2785		Q604	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q202	8-729-178-54	TRANSISTOR 2SC2785		Q606	8-729-117-54	TRANSISTOR 2SA1175	
Q207	8-729-178-54	TRANSISTOR 2SC2785		RESISTOR			
Q208	8-729-178-54	TRANSISTOR 2SC2785		R001	1-249-431-11	CARBON 15K 5%	1/4W
Q209	8-729-178-54	TRANSISTOR 2SC2785		R002	1-249-433-11	CARBON 22K 5%	1/4W
Q210	8-729-178-54	TRANSISTOR 2SC2785		R003	1-249-414-11	CARBON 560 5%	1/4W
Q212	8-729-117-54	TRANSISTOR 2SA1175		R004	1-249-414-11	CARBON 560 5%	1/4W
Q213	8-729-203-48	TRANSISTOR 2SC3327-A		R005	1-249-417-11	CARBON 1K 5%	1/4W
Q217	8-729-117-54	TRANSISTOR 2SA1175		R006	1-249-421-11	CARBON 2.2K 5%	1/4W
Q218	8-729-178-54	TRANSISTOR 2SC2785		R010	1-249-433-11	CARBON 22K 5%	1/4W
Q219	8-729-117-54	TRANSISTOR 2SA1175		R011	1-249-431-11	CARBON 15K 5%	1/4W
Q220	8-729-900-89	TRANSISTOR DTC144ES		R012	1-249-435-11	CARBON 33K 5%	1/4W
Q301	8-729-178-54	TRANSISTOR 2SC2785		R013	1-249-417-11	CARBON 1K 5%	1/4W
Q302	8-729-203-48	TRANSISTOR 2SC3327-A		R014	1-247-895-00	CARBON 470K 5%	1/4W
Q303	8-729-178-54	TRANSISTOR 2SC2785		R015	1-249-419-11	CARBON 1.5K 5%	1/4W
Q304	8-729-178-54	TRANSISTOR 2SC2785		R016	1-249-411-11	CARBON 330 5%	1/4W
Q305	8-729-178-54	TRANSISTOR 2SC2785		R017	1-249-405-11	CARBON 100 5%	1/4W
Q306	8-729-117-54	TRANSISTOR 2SA1175		R018	1-249-437-11	CARBON 47K 5%	1/4W
Q311	8-729-178-54	TRANSISTOR 2SC2785		R019	1-249-436-11	CARBON 39K 5%	1/4W
Q312	8-729-178-54	TRANSISTOR 2SC2785		R020	1-249-440-11	CARBON 82K 5%	1/4W
Q313	8-729-178-54	TRANSISTOR 2SC2785		R021	1-249-421-11	CARBON 2.2K 5%	1/4W
Q314	8-729-203-48	TRANSISTOR 2SC3327-A		R027	1-249-417-11	CARBON 1K 5%	1/4W
Q315	8-729-203-48	TRANSISTOR 2SC3327-A		R028	1-249-417-11	CARBON 1K 5%	1/4W
Q316	8-729-117-54	TRANSISTOR 2SA1175		R029	1-249-435-11	CARBON 33K 5%	1/4W
Q321	8-729-178-54	TRANSISTOR 2SC2785		R031	1-249-423-11	CARBON 3.3K 5%	1/4W
Q322	8-729-178-54	TRANSISTOR 2SC2785		R032	1-215-453-00	METAL 22K 1%	1/6W
Q323	8-729-178-54	TRANSISTOR 2SC2785		R033	1-215-453-00	METAL 22K 1%	1/6W
Q324	8-729-203-48	TRANSISTOR 2SC3327-A		R034	1-249-433-11	CARBON 22K 5%	1/4W
Q325	8-729-178-54	TRANSISTOR 2SC2785		R035	1-249-429-11	CARBON 10K 5%	1/4W
Q326	8-729-117-54	TRANSISTOR 2SA1175		R036	1-249-427-11	CARBON 6.8K 5%	1/4W
Q327	8-729-178-54	TRANSISTOR 2SC2785		R037	1-249-421-11	CARBON 2.2K 5%	1/4W
Q328	8-729-178-54	TRANSISTOR 2SC2785		R038	1-249-414-11	CARBON 560 5%	1/4W
Q329	8-729-178-54	TRANSISTOR 2SC2785		R039	1-247-903-00	CARBON 1M 5%	1/4W
Q330	8-729-178-54	TRANSISTOR 2SC2785		R040	1-249-432-11	CARBON 18K 5%	1/4W
Q331	8-729-178-54	TRANSISTOR 2SC2785		R041	1-249-429-11	CARBON 10K 5%	1/4W
Q332	8-729-178-54	TRANSISTOR 2SC2785		R042	1-249-417-11	CARBON 1K 5%	1/4W
Q333	8-729-178-54	TRANSISTOR 2SC2785		R043	1-249-439-11	CARBON 68K 5%	1/4W
Q334	8-729-178-54	TRANSISTOR 2SC2785		R044	1-249-421-11	CARBON 2.2K 5%	1/4W
Q335	8-729-178-54	TRANSISTOR 2SC2785		R047	1-249-429-11	CARBON 10K 5%	1/4W
Q338	8-729-178-54	TRANSISTOR 2SC2785		R048	1-249-407-11	CARBON 150 5%	1/4W
Q501	8-729-178-54	TRANSISTOR 2SC2785		R049	1-249-429-11	CARBON 10K 5%	1/4W
Q502	8-729-117-54	TRANSISTOR 2SA1175		R101	1-249-429-11	CARBON 10K 5%	1/4W
Q505	8-729-178-54	TRANSISTOR 2SC2785		R102	1-249-429-11	CARBON 10K 5%	1/4W
Q507	8-729-900-61	TRANSISTOR DTA114ES		R103	1-249-433-11	CARBON 22K 5%	1/4W
Q508	8-729-900-89	TRANSISTOR DTC144ES		R104	1-249-431-11	CARBON 15K 5%	1/4W
Q509	8-729-900-80	TRANSISTOR DTC114ES		R105	1-249-430-11	CARBON 12K 5%	1/4W
Q513	8-729-900-89	TRANSISTOR DTC144ES		R106	1-249-417-11	CARBON 1K 5%	1/4W
Q514	8-729-900-89	TRANSISTOR DTC144ES					

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R107	1-249-425-11	CARBON	4.7K 5% 1/4W	R317	1-249-417-11	CARBON	1K 5% 1/4W
R108	1-249-423-11	CARBON	3.3K 5% 1/4W	R318	1-249-430-11	CARBON	12K 5% 1/4W
R109	1-249-429-11	CARBON	10K 5% 1/4W	R319	1-249-418-11	CARBON	1.2K 5% 1/4W
R110	1-249-429-11	CARBON	10K 5% 1/4W	R330	1-249-425-11	CARBON	4.7K 5% 1/4W
R111	1-249-431-11	CARBON	15K 5% 1/4W	R331	1-249-426-11	CARBON	5.6K 5% 1/4W
R112	1-249-433-11	CARBON	22K 5% 1/4W	R332	1-249-423-11	CARBON	3.3K 5% 1/4W
R113	1-249-429-11	CARBON	10K 5% 1/4W	R333	1-249-413-11	CARBON	470 5% 1/4W
R201	1-249-431-11	CARBON	15K 5% 1/4W	R334	1-249-425-11	CARBON	4.7K 5% 1/4W
R202	1-249-433-11	CARBON	22K 5% 1/4W	R335	1-249-419-11	CARBON	1.5K 5% 1/4W
R203	1-249-413-11	CARBON	470 5% 1/4W	R336	1-249-441-11	CARBON	100K 5% 1/4W
R204	1-249-417-11	CARBON	1K 5% 1/4W	R337	1-249-441-11	CARBON	100K 5% 1/4W
R205	1-249-417-11	CARBON	1K 5% 1/4W	R338	1-249-417-11	CARBON	1K 5% 1/4W
R206	1-249-413-11	CARBON	470 5% 1/4W	R339	1-249-430-11	CARBON	12K 5% 1/4W
R221	1-249-414-11	CARBON	560 5% 1/4W	R340	1-249-418-11	CARBON	1.2K 5% 1/4W
R222	1-249-413-11	CARBON	470 5% 1/4W	R350	1-249-425-11	CARBON	4.7K 5% 1/4W
R223	1-249-425-11	CARBON	4.7K 5% 1/4W	R351	1-249-426-11	CARBON	5.6K 5% 1/4W
R224	1-249-417-11	CARBON	1K 5% 1/4W	R352	1-249-423-11	CARBON	3.3K 5% 1/4W
R225	1-249-417-11	CARBON	1K 5% 1/4W	R353	1-249-413-11	CARBON	470 5% 1/4W
R226	1-249-420-11	CARBON	1.8K 5% 1/4W	R354	1-249-421-11	CARBON	2.2K 5% 1/4W
R227	1-249-420-11	CARBON	1.8K 5% 1/4W	R355	1-249-428-11	CARBON	8.2K 5% 1/4W
R229	1-249-419-11	CARBON	1.5K 5% 1/4W	R356	1-249-429-11	CARBON	10K 5% 1/4W
R230	1-249-435-11	CARBON	33K 5% 1/4W	R357	1-249-419-11	CARBON	1.5K 5% 1/4W
R231	1-249-431-11	CARBON	15K 5% 1/4W	R358	1-249-441-11	CARBON	100K 5% 1/4W
R232	1-249-411-11	CARBON	330 5% 1/4W	R359	1-249-414-11	CARBON	560 5% 1/4W
R234	1-249-414-11	CARBON	560 5% 1/4W	R360	1-249-419-11	CARBON	1.5K 5% 1/4W
R235	1-249-411-11	CARBON	330 5% 1/4W	R361	1-249-413-11	CARBON	470 5% 1/4W
R236	1-249-435-11	CARBON	33K 5% 1/4W	R362	1-249-417-11	CARBON	1K 5% 1/4W
R237	1-249-431-11	CARBON	15K 5% 1/4W	R363	1-249-408-11	CARBON	180 5% 1/4W
R239	1-249-433-11	CARBON	22K 5% 1/4W	R364	1-249-429-11	CARBON	10K 5% 1/4W
R246	1-249-401-11	CARBON	47 5% 1/4W	R365	1-249-433-11	CARBON	22K 5% 1/4W
R247	1-249-396-11	CARBON	18 5% 1/4W	R366	1-249-413-11	CARBON	470 5% 1/4W
R248	1-249-416-11	CARBON	820 5% 1/4W	R367	1-249-414-11	CARBON	560 5% 1/4W
R249	1-249-405-11	CARBON	100 5% 1/4W	R368	1-249-417-11	CARBON	1K 5% 1/4W
R250	1-249-417-11	CARBON	1K 5% 1/4W	R369	1-249-429-11	CARBON	10K 5% 1/4W
R252	1-249-421-11	CARBON	2.2K 5% 1/4W	R370	1-249-434-11	CARBON	27K 5% 1/4W
R253	1-249-429-11	CARBON	10K 5% 1/4W	R371	1-249-413-11	CARBON	470 5% 1/4W
R255	1-249-423-11	CARBON	3.3K 5% 1/4W	R372	1-249-414-11	CARBON	560 5% 1/4W
R301	1-249-430-11	CARBON	12K 5% 1/4W	R373	1-249-417-11	CARBON	1K 5% 1/4W
R302	1-249-433-11	CARBON	22K 5% 1/4W	R380	1-249-405-11	CARBON	100 5% 1/4W
R303	1-249-413-11	CARBON	470 5% 1/4W	R381	1-249-413-11	CARBON	470 5% 1/4W
R304	1-249-434-11	CARBON	27K 5% 1/4W	R382	1-249-405-11	CARBON	100 5% 1/4W
R305	1-249-432-11	CARBON	18K 5% 1/4W	R383	1-249-413-11	CARBON	470 5% 1/4W
R306	1-249-417-11	CARBON	1K 5% 1/4W	R384	1-249-429-11	CARBON	10K 5% 1/4W
R307	1-249-414-11	CARBON	560 5% 1/4W	R385	1-249-414-11	CARBON	560 5% 1/4W
R308	1-249-432-11	CARBON	18K 5% 1/4W	R386	1-249-414-11	CARBON	560 5% 1/4W
R309	1-249-432-11	CARBON	18K 5% 1/4W	R387	1-249-431-11	CARBON	15K 5% 1/4W
R310	1-249-417-11	CARBON	1K 5% 1/4W	R388	1-249-435-11	CARBON	33K 5% 1/4W
R311	1-249-419-11	CARBON	1.5K 5% 1/4W	R389	1-249-414-11	CARBON	560 5% 1/4W
R312	1-249-423-11	CARBON	3.3K 5% 1/4W	R390	1-249-417-11	CARBON	1K 5% 1/4W
R313	1-249-411-11	CARBON	330 5% 1/4W	R392	1-249-420-11	CARBON	1.8K 5% 1/4W
R314	1-249-419-11	CARBON	1.5K 5% 1/4W	R394	1-249-421-11	CARBON	2.2K 5% 1/4W
R315	1-249-423-11	CARBON	3.3K 5% 1/4W	R396	1-249-441-11	CARBON	100K 5% 1/4W
R316	1-249-411-11	CARBON	330 5% 1/4W	R397	1-249-441-11	CARBON	100K 5% 1/4W

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R398	1-249-429-11	CARBON	10K 5% 1/4W	R645	1-249-429-11	CARBON	10K 5% 1/4W
R399	1-249-437-11	CARBON	47K 5% 1/4W	R647	1-249-429-11	CARBON	10K 5% 1/4W
R400	1-249-413-11	CARBON	470 5% 1/4W	R648	1-249-429-11	CARBON	10K 5% 1/4W
R401	1-249-405-11	CARBON	100 5% 1/4W				
R501	1-249-417-11	CARBON	1K 5% 1/4W			VARIABLE RESISTOR	
R502	1-247-903-00	CARBON	1M 5% 1/4W	RV001	1-228-995-00	RES, ADJ, CARBON 22K	
R503	1-249-423-11	CARBON	3.3K 5% 1/4W	RV003	1-228-996-00	RES, ADJ, METAL GLAZE 47K	
R505	1-249-422-11	CARBON	2.7K 5% 1/4W	RV101	1-228-994-00	RES, ADJ, CARBON 10K	
R506	1-249-425-11	CARBON	4.7K 5% 1/4W	RV102	1-228-994-00	RES, ADJ, CARBON 10K	
R506	1-249-425-11	CARBON	4.7K 5% 1/4W	RV104	1-228-994-00	RES, ADJ, CARBON 10K	
R507	1-249-414-11	CARBON	560 5% 1/4W	RV201	1-228-989-00	RES, ADJ, CARBON 470	
R508	1-249-397-11	CARBON	22 5% 1/4W	RV304	1-228-990-00	RES, ADJ, CARBON 1K	
R509	1-249-429-11	CARBON	10K 5% 1/4W	RV501	1-228-991-00	RES, ADJ, CARBON 2.2K	
R510	1-249-435-11	CARBON	33K 5% 1/4W	RV502	1-228-994-00	RES, ADJ, CARBON 10K	
R511	1-249-428-11	CARBON	8.2K 5% 1/4W	RV601	1-228-993-00	RES, ADJ, CARBON 4.7K	
R512	1-249-429-11	CARBON	10K 5% 1/4W			CRYSTAL	
R513	1-249-429-11	CARBON	10K 5% 1/4W	X001	1-567-866-11	VIBRATOR, CRYSTAL	
R516	1-249-425-11	CARBON	4.7K 5% 1/4W	X501	1-567-132-00	VIBLATOR, CERAMIC 8MHz	
R517	1-249-433-11	CARBON	22K 5% 1/4W	X601	1-567-894-11	VIBRATOR, CRYSTAL 20.1MHz	
R518	1-249-429-11	CARBON	10K 5% 1/4W			*****	
R519	1-249-439-11	CARBON	68K 5% 1/4W			*A-6711-952-A VI-40 BOARD, COMPLETE	
R520	1-249-429-11	CARBON	10K 5% 1/4W			*****	
R522	1-249-425-11	CARBON	4.7K 5% 1/4W			(Including the VS-29, CH-45, EQ-3, HJ-5 (A), CH-49 and RF-20 BOARD)	
R523	1-249-423-11	CARBON	3.3K 5% 1/4W				
R527	1-249-434-11	CARBON	27K 5% 1/4W			*1-566-953-11 PIN, BOARD TO BOARD 2P	
R528	1-249-429-11	CARBON	10K 5% 1/4W			*2-522-807-01 RETAINER (B), MICROPHONE	
R530	1-249-429-11	CARBON	10K 5% 1/4W			*3-710-578-01 COVER, VOLUME, 6 MOLD	
R531	1-249-441-11	CARBON	100K 5% 1/4W				
R533	1-249-429-11	CARBON	10K 5% 1/4W			CAPACITOR	
R534	1-249-428-11	CARBON	8.2K 5% 1/4W				
R601	1-249-429-11	CARBON	10K 5% 1/4W	C103	1-124-236-00	ELECT 47MF 20% 10V	
R602	1-249-428-11	CARBON	8.2K 5% 1/4W	C104	1-124-236-00	ELECT 47MF 20% 10V	
R603	1-249-424-11	CARBON	3.9K 5% 1/4W	C105	1-124-290-00	ELECT 47MF 20% 10V	
R604	1-249-432-11	CARBON	18K 5% 1/4W	C106	1-161-051-00	CERAMIC 0.01MF 10% 25V	
R605	1-249-431-11	CARBON	15K 5% 1/4W	C107	1-124-236-00	ELECT 47MF 20% 10V	
R606	1-249-413-11	CARBON	470 5% 1/4W	C108	1-161-051-00	CERAMIC 0.01MF 10% 25V	
R607	1-249-426-11	CARBON	5.6K 5% 1/4W	C109	1-124-236-00	ELECT 47MF 20% 10V	
R608	1-249-407-11	CARBON	150 5% 1/4W	C110	1-161-051-00	CERAMIC 0.01MF 10% 25V	
R609	1-249-437-11	CARBON	47K 5% 1/4W	C111	1-161-051-00	CERAMIC 0.01MF 10% 25V	
R610	1-249-437-11	CARBON	47K 5% 1/4W	C112	1-124-236-00	ELECT 47MF 20% 10V	
R615	1-249-437-11	CARBON	47K 5% 1/4W	C113	1-161-051-00	CERAMIC 0.01MF 10% 25V	
R616	1-249-431-11	CARBON	15K 5% 1/4W	C115	1-161-051-00	CERAMIC 0.01MF 10% 25V	
R617	1-247-700-11	CARBON	100 5% 1/4W	C116	1-124-234-00	ELECT 22MF 20% 16V	
R618	1-249-431-11	CARBON	15K 5% 1/4W	C117	1-124-236-00	ELECT 47MF 20% 10V	
R619	1-249-417-11	CARBON	1K 5% 1/4W	C118	1-161-051-00	CERAMIC 0.01MF 10% 25V	
R620	1-249-409-11	CARBON	220 5% 1/4W	C120	1-161-051-00	CERAMIC 0.01MF 10% 25V	
R621	1-249-411-11	CARBON	330 5% 1/4W	C121	1-102-820-00	CERAMIC 330PF 5% 50V	
R622	1-247-903-00	CARBON	1M 5% 1/4W	C122	1-101-888-00	CERAMIC 68PF 5% 50V	
R623	1-247-903-00	CARBON	1M 5% 1/4W	C123	1-161-772-11	CERAMIC 0.1MF 10% 25V	
R624	1-247-903-00	CARBON	1M 5% 1/4W	C124	1-124-462-00	ELECT 10MF 20% 16V	
R635	1-249-438-11	CARBON	56K 5% 1/4W	C125	1-161-039-00	CERAMIC 0.001MF 10% 25V	
R643	1-249-433-11	CARBON	22K 5% 1/4W	C127	1-130-471-00	MYLAR 0.001MF 5% 50V	
R644	1-249-427-11	CARBON	6.8K 5% 1/4W				

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Ref.No	Part No.	Description			Remark	Ref.No	Part No.	Description			Remark
C128	1-130-491-00	MYLAR	0.047MF	5%	50V	C258	1-123-611-00	ELECT	1MF	20%	50V
C129	1-102-816-00	CERAMIC	120PF	5%	50V	C259	1-123-611-00	ELECT	1MF	20%	50V
C130	1-124-236-00	ELECT	47MF	20%	10V	C260	1-130-479-00	MYLAR	0.0047MF	5%	50V
C131	1-161-379-00	CERAMIC	0.01MF	30%	16V	C261	1-102-816-00	CERAMIC	120PF	5%	50V
C132	1-161-021-11	CERAMIC	0.047MF	10%	25V	C262	1-124-245-00	ELECT	4.7MF	20%	25V
C133	1-102-973-00	CERAMIC	100PF	5%	50V	C264	1-124-290-00	ELECT	47MF	20%	10V
C134	1-161-379-00	CERAMIC	0.01MF	30%	16V	C265	1-124-290-00	ELECT	47MF	20%	10V
C135	1-101-004-00	CERAMIC	0.01MF		50V	C266	1-124-290-00	ELECT	47MF	20%	10V
C136	1-161-051-00	CERAMIC	0.01MF	10%	25V	C270	1-102-971-00	CERAMIC	82PF	5%	50V
C137	1-161-379-00	CERAMIC	0.01MF	30%	16V	C272	1-124-236-00	ELECT	47MF	20%	10V
C138	1-124-236-00	ELECT	47MF	20%	10V	C275	1-102-953-00	CERAMIC	18PF	5%	50V
C139	1-161-051-00	CERAMIC	0.01MF	10%	25V	C278	1-124-245-00	ELECT	4.7MF	20%	25V
C141	1-101-004-00	CERAMIC	0.01MF		50V	C303	1-124-236-00	ELECT	47MF	20%	10V
C142	1-102-822-00	CERAMIC	390PF	5%	50V	C304	1-124-236-00	ELECT	47MF	20%	10V
C144	1-161-021-11	CERAMIC	0.047MF	10%	25V	C305	1-124-236-00	ELECT	47MF	20%	10V
C150	1-124-236-00	ELECT	47MF	20%	10V	C306	1-124-236-00	ELECT	47MF	20%	10V
C151	1-124-236-00	ELECT	47MF	20%	10V	C307	1-161-051-00	CERAMIC	0.01MF	10%	25V
C152	1-161-051-00	CERAMIC	0.01MF	10%	25V	C308	1-124-245-00	ELECT	4.7MF	20%	25V
C161	1-102-953-00	CERAMIC	18PF	5%	50V	C309	1-124-234-00	ELECT	22MF	20%	16V
C162	1-124-236-00	ELECT	47MF	20%	10V	C310	1-124-234-00	ELECT	22MF	20%	16V
C163	1-124-236-00	ELECT	47MF	20%	10V	C311	1-130-479-00	MYLAR	0.0047MF	5%	50V
C170	1-124-236-00	ELECT	47MF	20%	10V	C312	1-130-496-00	MYLAR	0.12MF	5%	50V
C185	1-124-234-00	ELECT	22MF	20%	16V	C313	1-124-236-00	ELECT	47MF	20%	10V
C186	1-124-584-00	ELECT	100MF	20%	10V	C314	1-161-051-00	CERAMIC	0.01MF	10%	25V
C201	1-161-051-00	CERAMIC	0.01MF	10%	25V	C315	1-102-978-00	CERAMIC	220PF	5%	50V
C202	1-124-236-00	ELECT	47MF	20%	10V	C316	1-102-958-00	CERAMIC	20PF	5%	50V
C203	1-124-472-11	ELECT	470MF	20%	10V	C317	1-124-236-00	ELECT	47MF	20%	10V
C206	1-124-236-00	ELECT	47MF	20%	10V	C320	1-101-004-00	CERAMIC	0.01MF		50V
C210	1-124-236-00	ELECT	47MF	20%	10V	C340	1-101-004-00	CERAMIC	0.01MF		50V
C212	1-124-236-00	ELECT	47MF	20%	10V	C341	1-124-236-00	ELECT	47MF	20%	10V
C215	1-102-971-00	CERAMIC	82PF	5%	50V	C343	1-102-949-00	CERAMIC	12PF	5%	50V
C216	1-102-947-00	CERAMIC	10PF	0.5PF	50V	C344	1-101-888-00	CERAMIC	68PF	5%	50V
C218	1-161-051-00	CERAMIC	0.01MF	10%	25V	C345	1-124-229-00	ELECT	33MF	20%	10V
C220	1-124-236-00	ELECT	47MF	20%	10V	C381	1-102-947-00	CERAMIC	10PF	0.5PF	50V
C222	1-161-051-00	CERAMIC	0.01MF	10%	25V	C382	1-102-961-00	CERAMIC	27PF	5%	50V
C223	1-124-236-00	ELECT	47MF	20%	10V	C388	1-124-236-00	ELECT	47MF	20%	10V
C224	1-124-236-00	ELECT	47MF	20%	10V	C389	1-124-236-00	ELECT	47MF	20%	10V
C225	1-124-236-00	ELECT	47MF	20%	10V	C391	1-102-944-00	CERAMIC	7PF	1PF	50V
C226	1-124-229-00	ELECT	33MF	20%	10V	C393	1-102-951-00	CERAMIC	15PF	5%	50V
C227	1-161-051-00	CERAMIC	0.01MF	10%	25V	C401	1-161-051-00	CERAMIC	0.01MF	10%	25V
C228	1-124-236-00	ELECT	47MF	20%	10V	C402	1-124-236-00	ELECT	47MF	20%	10V
C230	1-124-236-00	ELECT	47MF	20%	10V	C403	1-161-379-00	CERAMIC	0.01MF	30%	16V
C231	1-123-611-00	ELECT	1MF	20%	50V	C404	1-123-611-00	ELECT	1MF	20%	50V
C235	1-124-584-00	ELECT	100MF	20%	10V	C405	1-161-379-00	CERAMIC	0.01MF	30%	16V
C236	1-124-236-00	ELECT	47MF	20%	10V	C406	1-161-379-00	CERAMIC	0.01MF	30%	16V
C239	1-161-051-00	CERAMIC	0.01MF	10%	25V	C407	1-161-051-00	CERAMIC	0.01MF	10%	25V
C241	1-102-953-00	CERAMIC	18PF	5%	50V	C408	1-161-379-00	CERAMIC	0.01MF	30%	16V
C242	1-101-361-00	CERAMIC	150PF	5%	50V	C409	1-102-961-00	CERAMIC	27PF	5%	50V
C243	1-124-236-00	ELECT	47MF	20%	10V	C410	1-102-816-00	CERAMIC	120PF	5%	50V
C244	1-102-951-00	CERAMIC	15PF	5%	50V	C411	1-101-888-00	CERAMIC	68PF	5%	50V
C247	1-124-443-00	ELECT	100MF	20%	10V	C412	1-124-245-00	ELECT	4.7MF	20%	25V
C248	1-124-234-00	ELECT	22MF	20%	16V	C413	1-102-816-00	CERAMIC	120PF	5%	50V
C257	1-101-004-00	CERAMIC	0.01MF		50V	C414	1-102-961-00	CERAMIC	27PF	5%	50V

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C415	1-161-379-00	CERAMIC	0.01MF 30% 16V	C611	1-102-958-00	CERAMIC	20PF 5% 50V
C416	1-123-611-00	ELECT	1MF 20% 50V	C612	1-102-824-00	CERAMIC	470PF 5% 50V
C417	1-102-976-00	CERAMIC	180PF 5% 50V	C614	1-124-245-00	ELECT	4.7MF 20% 25V
C418	1-161-379-00	CERAMIC	0.01MF 30% 16V	C617	1-124-462-00	ELECT	10MF 20% 16V
C419	1-161-379-00	CERAMIC	0.01MF 30% 16V	C618	1-161-021-11	CERAMIC	0.047MF 10% 25V
C420	1-124-236-00	ELECT	47MF 20% 10V	C624	1-124-245-00	ELECT	4.7MF 20% 25V
C421	1-161-379-00	CERAMIC	0.01MF 30% 16V	C701	1-124-236-00	ELECT	47MF 20% 10V
C422	1-124-245-00	ELECT	4.7MF 20% 25V	C702	1-123-611-00	ELECT	1MF 20% 50V
C423	1-161-379-00	CERAMIC	0.01MF 30% 16V	C703	1-124-245-00	ELECT	4.7MF 20% 25V
C424	1-124-462-00	ELECT	10MF 20% 16V	C704	1-161-051-00	CERAMIC	0.01MF 10% 25V
C425	1-102-125-00	CERAMIC	0.0047MF 10% 50V	C705	1-124-462-00	ELECT	10MF 20% 16V
C426	1-102-973-00	CERAMIC	100PF 5% 50V	C706	1-124-257-00	ELECT	2.2MF 20% 50V
C427	1-161-379-00	CERAMIC	0.01MF 30% 16V	C707	1-124-257-00	ELECT	2.2MF 20% 50V
C428	1-161-379-00	CERAMIC	0.01MF 30% 16V	C708	1-124-236-00	ELECT	47MF 20% 10V
C429	1-124-462-00	ELECT	10MF 20% 16V	C709	1-161-051-00	CERAMIC	0.01MF 10% 25V
C430	1-124-257-00	ELECT	2.2MF 20% 50V	C760	1-101-004-00	CERAMIC	0.01MF 50V
C431	1-161-021-11	CERAMIC	0.047MF 10% 25V	C761	1-124-236-00	ELECT	47MF 20% 10V
C432	1-130-488-00	MYLAR	0.027MF 5% 50V	C802	1-101-004-00	CERAMIC	0.01MF 50V
C433	1-123-611-00	ELECT	1MF 20% 50V	C803	1-101-004-00	CERAMIC	0.01MF 50V
C434	1-102-961-00	CERAMIC	27PF 5% 50V	C804	1-102-963-00	CERAMIC	33PF 5% 50V
C435	1-124-236-00	ELECT	47MF 20% 10V	C805	1-124-236-00	ELECT	47MF 20% 10V
C436	1-101-888-00	CERAMIC	68PF 5% 50V	C806	1-101-004-00	CERAMIC	0.01MF 50V
C437	1-161-051-00	CERAMIC	0.01MF 10% 25V	C807	1-124-584-00	ELECT	100MF 20% 10V
C438	1-161-051-00	CERAMIC	0.01MF 10% 25V	C808	1-124-236-00	ELECT	47MF 20% 10V
C439	1-124-236-00	ELECT	47MF 20% 10V	C809	1-102-965-00	CERAMIC	39PF 5% 50V
C440	1-161-379-00	CERAMIC	0.01MF 30% 16V	C810	1-102-953-00	CERAMIC	18PF 5% 50V
C441	1-161-041-00	CERAMIC	0.0015MF 10% 25V	C811	1-124-290-00	ELECT	47MF 20% 10V
C442	1-102-971-00	CERAMIC	82PF 5% 50V	C812	1-102-963-00	CERAMIC	33PF 5% 50V
C443	1-102-966-00	CERAMIC	43PF 5% 50V	C813	1-102-963-00	CERAMIC	33PF 5% 50V
C444	1-161-055-00	CERAMIC	0.022MF 10% 25V	C814	1-101-004-00	CERAMIC	0.01MF 50V
C445	1-161-379-00	CERAMIC	0.01MF 30% 16V	C815	1-101-880-00	CERAMIC	47PF 5% 50V
C446	1-123-611-00	ELECT	1MF 20% 50V	C816	1-124-236-00	ELECT	47MF 20% 10V
C447	1-124-245-00	ELECT	4.7MF 20% 25V	C817	1-101-884-00	CERAMIC	56PF 5% 50V
C448	1-124-257-00	ELECT	2.2MF 20% 50V	C818	1-124-236-00	ELECT	47MF 20% 10V
C449	1-161-051-00	CERAMIC	0.01MF 10% 25V	C819	1-161-021-11	CERAMIC	0.047MF 10% 25V
C450	1-124-236-00	ELECT	47MF 20% 10V	C820	1-161-021-11	CERAMIC	0.047MF 10% 25V
C451	1-124-236-00	ELECT	47MF 20% 10V	C821	1-124-245-00	ELECT	4.7MF 20% 25V
C452	1-161-051-00	CERAMIC	0.01MF 10% 25V	C822	1-101-004-00	CERAMIC	0.01MF 50V
C453	1-161-379-00	CERAMIC	0.01MF 30% 16V	C823	1-101-880-00	CERAMIC	47PF 5% 50V
C454	1-161-051-00	CERAMIC	0.01MF 10% 25V	C824	1-101-880-00	CERAMIC	47PF 5% 50V
C455	1-161-041-00	CERAMIC	0.0015MF 10% 25V	C830	1-102-965-00	CERAMIC	39PF 5% 50V
C456	1-161-379-00	CERAMIC	0.01MF 30% 16V	C834	1-124-446-11	ELECT	47MF 20% 10V
C470	1-161-379-00	CERAMIC	0.01MF 30% 16V	C893	1-102-961-00	CERAMIC	27PF 5% 50V
C471	1-161-051-00	CERAMIC	0.01MF 10% 25V	C901	1-124-236-00	ELECT	47MF 20% 10V
C480	1-101-004-00	CERAMIC	0.01MF 50V	C902	1-124-236-00	ELECT	47MF 20% 10V
C601	1-161-051-00	CERAMIC	0.01MF 10% 25V	C903	1-101-004-00	CERAMIC	0.01MF 50V
C602	1-124-236-00	ELECT	47MF 20% 10V	C904	1-101-004-00	CERAMIC	0.01MF 50V
C603	1-124-236-00	ELECT	47MF 20% 10V	C905	1-124-446-11	ELECT	47MF 20% 10V
C604	1-102-949-00	CERAMIC	12PF 5% 50V	C906	1-124-471-00	ELECT	1000MF 20% 6.3V
C605	1-161-051-00	CERAMIC	0.01MF 10% 25V	C907	1-124-236-00	ELECT	47MF 20% 10V
C606	1-124-236-00	ELECT	47MF 20% 10V	C908	1-124-471-00	ELECT	1000MF 20% 6.3V
C607	1-161-051-00	CERAMIC	0.01MF 10% 25V	C909	1-101-004-00	CERAMIC	0.01MF 50V
C610	1-101-880-00	CERAMIC	47PF 5% 50V	C910	1-124-446-11	ELECT	47MF 20% 10V

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C912	1-161-051-00	CERAMIC	0.01MF 10% 25V	D701	8-719-911-19	DIODE 1SS119	
C913	1-124-464-11	ELECT	0.22MF 20% 50V	D702	8-719-911-19	DIODE 1SS119	
C914	1-124-462-00	ELECT	10MF 20% 16V	D703	8-719-911-19	DIODE 1SS119	
C915	1-161-051-00	CERAMIC	0.01MF 10% 25V	D786	8-719-911-19	DIODE 1SS119	
C916	1-124-446-11	ELECT	47MF 20% 10V	D804	8-719-911-19	DIODE 1SS119	
C917	1-124-446-11	ELECT	47MF 20% 10V	D901	8-719-911-19	DIODE 1SS119	
C918	1-124-446-11	ELECT	47MF 20% 10V	D902	8-719-911-19	DIODE 1SS119	
				D903	8-719-911-19	DIODE 1SS119	
				D904	8-719-911-19	DIODE 1SS119	
<u>FILTER</u>				<u>DELAY LINE</u>			
CF301	1-567-390-11	FILTER, CERAMIC		DL101	1-415-107-31	DELAY LINE	
CF401	1-231-302-00	CERAMIC FILTER (4.27MHZ)		DL301	1-415-379-21	DELAY LINE, 1H	
CF402	1-567-390-11	FILTER, CERAMIC		DL801	1-415-342-00	DELAY LINE, 1H	
<u>CONNECTOR</u>				<u>FILTER</u>			
CN101	*1-564-002-00	PIN, CONNECTOR 3P		FL101	1-415-561-11	DELAY LINE, LC	
CN102	*1-560-893-00	PIN, CONNECTOR 5P		FL201	1-236-084-11	LPF (DEM.Y)	
CN103	*1-564-006-11	PIN, CONNECTOR 7P		FL302	1-415-560-11	DELAY LINE, LC	
CN104	*1-560-892-00	PIN, CONNECTOR 4P		FL303	1-415-558-11	DELAY LINE, LC	
CN105	1-564-003-00	PIN, CONNECTOR 4P		FL401	1-236-083-11	FILTER, BAND PASS	
CN106	*1-560-896-00	PIN, CONNECTOR 8P		FL402	1-236-082-11	FILTER, BAND PASS	
CN107	*1-564-006-11	PIN, CONNECTOR 7P					
CN108	*1-560-898-00	PIN, CONNECTOR 10P					
CN109	*1-560-892-00	PIN, CONNECTOR 4P					
CN110	*1-560-892-00	PIN, CONNECTOR 4P					
CN111	*1-560-893-00	PIN, CONNECTOR 5P					
CN112	*1-560-895-00	PIN, CONNECTOR 7P					
CN113	*1-560-892-00	PIN, CONNECTOR 4P					
CN114	*1-560-891-00	PIN, CONNECTOR 3P					
<u>CONNECTOR</u>				<u>IC</u>			
CNJ901	1-566-848-11	CONNECTOR, (S) TERMINAL 4P		IC101	8-759-101-62	IC CX20043	
CNJ902	1-566-848-11	CONNECTOR, (S) TERMINAL 4P		IC102	8-759-800-81	IC LA7016	
CNJ903	1-566-848-11	CONNECTOR, (S) TERMINAL 4P		IC103	8-759-800-81	IC LA7016	
				IC190	8-759-800-81	IC LA7016	
				IC201	1-808-083-21	IC DE-4	
				IC301	1-808-088-11	IC YK-2	
				IC401	8-759-203-99	IC CX10021B-NP	
				IC402	8-759-800-81	IC LA7016	
				IC601	1-808-085-11	IC YF-2	
				IC701	1-808-082-21	IC PE-4	
				IC801	1-808-084-11	IC CF-3	
<u>DIODE</u>				<u>COIL</u>			
D101	8-719-911-19	DIODE 1SS119		L150	1-408-413-00	INDUCTOR 22UH	
D102	8-719-911-19	DIODE 1SS119		L170	1-408-421-00	INDUCTOR 100UH	
D105	8-719-911-19	DIODE 1SS119		L251	1-408-415-00	INDUCTOR 33UH	
D108	8-719-911-19	DIODE 1SS119		L252	1-408-413-00	INDUCTOR 22UH	
D109	8-719-911-19	DIODE 1SS119		L253	1-408-412-00	INDUCTOR 18UH	
D201	8-719-911-19	DIODE 1SS119		L256	1-408-415-00	INDUCTOR 33UH	
D202	8-719-911-19	DIODE 1SS119		L301	1-408-413-00	INDUCTOR 22UH	
D251	8-719-911-19	DIODE 1SS119		L303	1-408-420-00	INDUCTOR 82UH	
D253	8-719-000-12	DIODE MC931		L320	1-408-414-00	INDUCTOR 27UH	
D254	8-719-000-12	DIODE MC931		L381	1-408-405-00	INDUCTOR 4.7UH	
D270	8-719-000-12	DIODE MC931		L401	1-408-424-00	INDUCTOR 180UH	
D301	8-719-911-19	DIODE 1SS119		L402	1-408-426-00	INDUCTOR 270UH	
D303	8-719-911-19	DIODE 1SS119		L403	1-408-424-00	INDUCTOR 180UH	
D401	8-719-911-19	DIODE 1SS119		L404	1-408-414-00	INDUCTOR 27UH	
D402	8-719-911-19	DIODE 1SS119		L405	1-408-423-00	INDUCTOR 150UH	
D602	8-719-911-19	DIODE 1SS119					
D603	8-719-911-19	DIODE 1SS119					
D604	8-719-911-19	DIODE 1SS119					

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
L406	1-410-065-21	INDUCTOR 3.3MMH		Q305	8-729-900-89	TRANSISTOR DTC144ES	
L602	1-408-423-00	INDUCTOR 150UH		Q306	8-729-603-50	TRANSISTOR 2SC403SP	
L605	1-408-247-00	INDUCTOR 33MMH		Q308	8-729-178-54	TRANSISTOR 2SC2785	
L610	1-408-427-00	INDUCTOR 330UH		Q310	8-729-178-54	TRANSISTOR 2SC2785	
L801	1-408-418-00	INDUCTOR 56UH		Q361	8-729-178-54	TRANSISTOR 2SC2785	
L802	1-408-420-00	INDUCTOR 82UH		Q362	8-729-178-54	TRANSISTOR 2SC2785	
L803	1-408-417-00	INDUCTOR 47UH		Q363	8-729-178-54	TRANSISTOR 2SC2785	
L805	1-408-412-00	INDUCTOR 18UH		Q382	8-729-178-54	TRANSISTOR 2SC2785	
L901	1-408-409-00	INDUCTOR 10UH		Q401	8-729-900-65	TRANSISTOR DTA144ES	
L902	1-408-409-00	INDUCTOR 10UH		Q402	8-729-900-89	TRANSISTOR DTC144ES	
<u>VARIABLE COIL</u>				Q403	8-729-178-54	TRANSISTOR 2SC2785	
LV151	1-408-512-00	COIL (VARIABLE) 10UH		Q404	8-729-900-89	TRANSISTOR DTC144ES	
LV801	1-408-512-00	COIL (VARIABLE) 10UH		Q405	8-729-900-89	TRANSISTOR DTC144ES	
<u>TRANSISTOR</u>				Q406	8-729-900-36	TRANSISTOR DTC124ES	
Q103	8-729-900-89	TRANSISTOR DTC144ES		Q407	8-729-900-36	TRANSISTOR DTC124ES	
Q104	8-729-900-89	TRANSISTOR DTC144ES		Q408	8-729-178-54	TRANSISTOR 2SC2785	
Q105	8-729-900-89	TRANSISTOR DTC144ES		Q409	8-729-178-54	TRANSISTOR 2SC2785	
Q106	8-729-900-89	TRANSISTOR DTC144ES		Q410	8-729-178-54	TRANSISTOR 2SC2785	
Q107	8-729-900-89	TRANSISTOR DTC144ES		Q411	8-729-178-54	TRANSISTOR 2SC2785	
Q108	8-729-900-89	TRANSISTOR DTC144ES		Q412	8-729-117-54	TRANSISTOR 2SA1175	
Q109	8-729-178-54	TRANSISTOR 2SC2785		Q415	8-729-178-54	TRANSISTOR 2SC2785	
Q110	8-729-900-89	TRANSISTOR DTC144ES		Q480	8-729-178-54	TRANSISTOR 2SC2785	
Q111	8-729-117-54	TRANSISTOR 2SA1175		Q601	8-729-900-89	TRANSISTOR DTC144ES	
Q113	8-729-900-89	TRANSISTOR DTC144ES		Q602	8-729-900-89	TRANSISTOR DTC144ES	
Q115	8-729-900-89	TRANSISTOR DTC144ES		Q604	8-729-117-54	TRANSISTOR 2SA1175	
Q123	8-729-178-54	TRANSISTOR 2SC2785		Q611	8-729-900-36	TRANSISTOR DTC124ES	
Q162	8-729-178-54	TRANSISTOR 2SC2785		Q760	8-729-900-89	TRANSISTOR DTC144ES	
Q163	8-729-178-54	TRANSISTOR 2SC2785		Q764	8-729-900-89	TRANSISTOR DTC144ES	
Q164	8-729-178-54	TRANSISTOR 2SC2785		Q801	8-729-178-54	TRANSISTOR 2SC2785	
Q165	8-729-178-54	TRANSISTOR 2SC2785		Q802	8-729-178-54	TRANSISTOR 2SC2785	
Q175	8-729-900-89	TRANSISTOR DTC144ES		Q803	8-729-178-54	TRANSISTOR 2SC2785	
Q195	8-729-178-54	TRANSISTOR 2SC2785		Q805	8-729-178-54	TRANSISTOR 2SC2785	
Q202	8-729-117-54	TRANSISTOR 2SA1175		Q806	8-729-900-89	TRANSISTOR DTC144ES	
Q205	8-729-178-54	TRANSISTOR 2SC2785		Q807	8-729-900-89	TRANSISTOR DTC144ES	
Q206	8-729-178-54	TRANSISTOR 2SC2785		Q808	8-729-900-89	TRANSISTOR DTC144ES	
Q208	8-729-178-54	TRANSISTOR 2SC2785		Q809	8-729-900-89	TRANSISTOR DTC144ES	
Q250	8-729-178-54	TRANSISTOR 2SC2785		Q810	8-729-900-89	TRANSISTOR DTC144ES	
Q251	8-729-900-65	TRANSISTOR DTA144ES		Q850	8-729-117-54	TRANSISTOR 2SA1175	
Q252	8-729-178-54	TRANSISTOR 2SC2785		Q901	8-729-178-54	TRANSISTOR 2SC2785	
Q254	8-729-178-54	TRANSISTOR 2SC2785		Q902	8-729-178-54	TRANSISTOR 2SC2785	
Q256	8-729-900-89	TRANSISTOR DTC144ES		Q903	8-729-178-54	TRANSISTOR 2SC2785	
Q257	8-729-178-54	TRANSISTOR 2SC2785		Q904	8-729-178-54	TRANSISTOR 2SC2785	
Q261	8-729-178-54	TRANSISTOR 2SC2785		Q905	8-729-900-89	TRANSISTOR DTC144ES	
Q270	8-729-117-54	TRANSISTOR 2SA1175		Q906	8-729-178-54	TRANSISTOR 2SC2785	
Q277	8-729-178-54	TRANSISTOR 2SC2785		Q907	8-729-900-89	TRANSISTOR DTC144ES	
Q278	8-729-178-54	TRANSISTOR 2SC2785		Q908	8-729-900-65	TRANSISTOR DTA144ES	
Q279	8-729-178-54	TRANSISTOR 2SC2785		Q909	8-729-900-80	TRANSISTOR DTC114ES	
Q301	8-729-178-54	TRANSISTOR 2SC2785		Q912	8-729-900-89	TRANSISTOR DTC144ES	
Q302	8-729-178-54	TRANSISTOR 2SC2785		Q913	8-729-900-89	TRANSISTOR DTC144ES	
Q303	8-729-178-54	TRANSISTOR 2SC2785		Q914	8-729-900-65	TRANSISTOR DTA144ES	
Q304	8-729-900-65	TRANSISTOR DTA144ES		Q915	8-729-900-89	TRANSISTOR DTC144ES	
				Q916	8-729-900-65	TRANSISTOR DTA144ES	
				Q917	8-729-900-89	TRANSISTOR DTC144ES	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
Q918	8-729-900-80	TRANSISTOR DTC114ES		R162	1-249-417-11	CARBON 1K 5% 1/4W	
Q919	8-729-117-54	TRANSISTOR 2SA1175		R163	1-249-418-11	CARBON 1.2K 5% 1/4W	
Q920	8-729-900-89	TRANSISTOR DTC144ES		R164	1-249-421-11	CARBON 2.2K 5% 1/4W	
Q921	8-729-117-54	TRANSISTOR 2SA1175		R165	1-247-832-11	CARBON 1.1K 5% 1/4W	
Q922	8-729-900-89	TRANSISTOR DTC144ES		R166	1-249-436-11	CARBON 39K 5% 1/4W	
Q923	8-729-117-54	TRANSISTOR 2SA1175		R167	1-249-432-11	CARBON 18K 5% 1/4W	
Q940	8-729-900-89	TRANSISTOR DTC144ES		R168	1-249-414-11	CARBON 560 5% 1/4W	
Q941	8-729-900-65	TRANSISTOR DTA144ES		R169	1-247-822-11	CARBON 430 5% 1/4W	
Q960	8-729-900-65	TRANSISTOR DTA144ES		R172	1-249-427-11	CARBON 6.8K 5% 1/4W	
RESISTOR				R174	1-249-409-11	CARBON 220 5% 1/4W	
R101	1-249-413-11	CARBON 470 5% 1/4W		R175	1-249-414-11	CARBON 560 5% 1/4W	
R105	1-249-429-11	CARBON 10K 5% 1/4W		R176	1-249-409-11	CARBON 220 5% 1/4W	
R106	1-249-416-11	CARBON 820 5% 1/4W		R178	1-249-413-11	CARBON 470 5% 1/4W	
R107	1-249-429-11	CARBON 10K 5% 1/4W		R180	1-247-891-00	CARBON 330K 5% 1/4W	
R109	1-249-429-11	CARBON 10K 5% 1/4W		R181	1-249-417-11	CARBON 1K 5% 1/4W	
R110	1-249-417-11	CARBON 1K 5% 1/4W		R183	1-249-439-11	CARBON 68K 5% 1/4W	
R114	1-249-409-11	CARBON 220 5% 1/4W		R185	1-249-421-11	CARBON 2.2K 5% 1/4W	
R115	1-249-417-11	CARBON 1K 5% 1/4W		R194	1-249-420-11	CARBON 1.8K 5% 1/4W	
R116	1-249-417-11	CARBON 1K 5% 1/4W		R201	1-249-409-11	CARBON 220 5% 1/4W	
R117	1-247-891-00	CARBON 330K 5% 1/4W		R202	1-249-417-11	CARBON 1K 5% 1/4W	
R118	1-249-421-11	CARBON 2.2K 5% 1/4W		R205	1-249-415-11	CARBON 680 5% 1/4W	
R119	1-249-432-11	CARBON 18K 5% 1/4W		R207	1-249-415-11	CARBON 680 5% 1/4W	
R120	1-249-413-11	CARBON 470 5% 1/4W		R208	1-249-415-11	CARBON 680 5% 1/4W	
R121	1-249-413-11	CARBON 470 5% 1/4W		R209	1-249-419-11	CARBON 1.5K 5% 1/4W	
R122	1-249-422-11	CARBON 2.7K 5% 1/4W		R210	1-249-415-11	CARBON 680 5% 1/4W	
R123	1-249-430-11	CARBON 12K 5% 1/4W		R214	1-249-417-11	CARBON 1K 5% 1/4W	
R124	1-247-899-11	CARBON 680K 5% 1/4W		R217	1-249-434-11	CARBON 27K 5% 1/4W	
R125	1-249-417-11	CARBON 1K 5% 1/4W		R218	1-249-431-11	CARBON 15K 5% 1/4W	
R126	1-249-421-11	CARBON 2.2K 5% 1/4W		R219	1-249-429-11	CARBON 10K 5% 1/4W	
R127	1-249-419-11	CARBON 1.5K 5% 1/4W		R222	1-249-433-11	CARBON 22K 5% 1/4W	
R128	1-247-852-11	CARBON 7.5K 5% 1/4W		R223	1-249-433-11	CARBON 22K 5% 1/4W	
R129	1-249-416-11	CARBON 820 5% 1/4W		R224	1-249-416-11	CARBON 820 5% 1/4W	
R130	1-249-432-11	CARBON 18K 5% 1/4W		R226	1-249-405-11	CARBON 100 5% 1/4W	
R131	1-249-425-11	CARBON 4.7K 5% 1/4W		R227	1-249-421-11	CARBON 2.2K 5% 1/4W	
R132	1-247-883-00	CARBON 150K 5% 1/4W		R228	1-249-419-11	CARBON 1.5K 5% 1/4W	
R133	1-249-435-11	CARBON 33K 5% 1/4W		R229	1-249-416-11	CARBON 820 5% 1/4W	
R134	1-249-427-11	CARBON 6.8K 5% 1/4W		R230	1-247-725-11	CARBON 10K 5% 1/4W	
R135	1-249-425-11	CARBON 4.7K 5% 1/4W		R234	1-249-432-11	CARBON 18K 5% 1/4W	
R136	1-249-429-11	CARBON 10K 5% 1/4W		R235	1-249-414-11	CARBON 560 5% 1/4W	
R137	1-249-429-11	CARBON 10K 5% 1/4W		R236	1-249-413-11	CARBON 470 5% 1/4W	
R139	1-247-883-00	CARBON 150K 5% 1/4W		R238	1-249-436-11	CARBON 39K 5% 1/4W	
R144	1-249-417-11	CARBON 1K 5% 1/4W		R240	1-249-414-11	CARBON 560 5% 1/4W	
R146	1-249-425-11	CARBON 4.7K 5% 1/4W		R241	1-249-432-11	CARBON 18K 5% 1/4W	
R149	1-249-418-11	CARBON 1.2K 5% 1/4W		R246	1-249-427-11	CARBON 6.8K 5% 1/4W	
R150	1-249-437-11	CARBON 47K 5% 1/4W		R248	1-247-698-11	CARBON 68 5% 1/4W	
R151	1-249-415-11	CARBON 680 5% 1/4W		R249	1-249-435-11	CARBON 33K 5% 1/4W	
R152	1-247-704-11	CARBON 220 5% 1/4W		R250	1-247-713-11	CARBON 1K 5% 1/4W	
R157	1-249-436-11	CARBON 39K 5% 1/4W		R260	1-249-417-11	CARBON 1K 5% 1/4W	
R158	1-249-417-11	CARBON 1K 5% 1/4W		R261	1-249-417-11	CARBON 1K 5% 1/4W	
R159	1-249-432-11	CARBON 18K 5% 1/4W		R262	1-249-432-11	CARBON 18K 5% 1/4W	
R160	1-249-414-11	CARBON 560 5% 1/4W		R263	1-249-432-11	CARBON 18K 5% 1/4W	
R161	1-249-401-11	CARBON 47 5% 1/4W		R264	1-249-417-11	CARBON 1K 5% 1/4W	
				R265	1-249-410-11	CARBON 270 5% 1/4W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R266	1-249-412-11	CARBON	390 5% 1/4W	R363	1-249-410-11	CARBON	270 5% 1/4W
R267	1-249-406-11	CARBON	120 5% 1/4W	R364	1-249-414-11	CARBON	560 5% 1/4W
R268	1-249-422-11	CARBON	2.7K 5% 1/4W	R365	1-249-433-11	CARBON	22K 5% 1/4W
R269	1-249-427-11	CARBON	6.8K 5% 1/4W	R366	1-249-437-11	CARBON	47K 5% 1/4W
R270	1-249-424-11	CARBON	3.9K 5% 1/4W	R367	1-249-417-11	CARBON	1K 5% 1/4W
R271	1-249-436-11	CARBON	39K 5% 1/4W	R368	1-247-713-11	CARBON	1K 5% 1/4W
R272	1-249-417-11	CARBON	1K 5% 1/4W	R381	1-249-415-11	CARBON	680 5% 1/4W
R273	1-249-412-11	CARBON	390 5% 1/4W	R382	1-249-417-11	CARBON	1K 5% 1/4W
R274	1-249-432-11	CARBON	18K 5% 1/4W	R383	1-249-419-11	CARBON	1.5K 5% 1/4W
R275	1-249-432-11	CARBON	18K 5% 1/4W	R384	1-249-417-11	CARBON	1K 5% 1/4W
R276	1-249-416-11	CARBON	820 5% 1/4W	R388	1-249-434-11	CARBON	27K 5% 1/4W
R278	1-249-422-11	CARBON	2.7K 5% 1/4W	R389	1-249-434-11	CARBON	27K 5% 1/4W
R280	1-249-422-11	CARBON	2.7K 5% 1/4W	R391	1-249-428-11	CARBON	8.2K 5% 1/4W
R281	1-249-434-11	CARBON	8.2K 5% 1/4W	R393	1-249-422-11	CARBON	2.7K 5% 1/4W
R282	1-249-421-11	CARBON	2.2K 5% 1/4W	R401	1-249-429-11	CARBON	10K 5% 1/4W
R285	1-247-903-00	CARBON	1M 5% 1/4W	R402	1-249-426-11	CARBON	5.6K 5% 1/4W
R286	1-249-427-11	CARBON	6.8K 5% 1/4W	R403	1-249-429-11	CARBON	10K 5% 1/4W
R287	1-249-427-11	CARBON	6.8K 5% 1/4W	R404	1-249-418-11	CARBON	1.2K 5% 1/4W
R288	1-249-434-11	CARBON	27K 5% 1/4W	R405	1-249-422-11	CARBON	2.7K 5% 1/4W
R289	1-249-433-11	CARBON	22K 5% 1/4W	R406	1-249-417-11	CARBON	1K 5% 1/4W
R290	1-249-417-11	CARBON	1K 5% 1/4W	R407	1-249-414-11	CARBON	560 5% 1/4W
R291	1-249-417-11	CARBON	1K 5% 1/4W	R409	1-249-441-11	CARBON	100K 5% 1/4W
R292	1-249-419-11	CARBON	1.5K 5% 1/4W	R410	1-249-422-11	CARBON	2.7K 5% 1/4W
R293	1-249-415-11	CARBON	680 5% 1/4W	R411	1-249-438-11	CARBON	56K 5% 1/4W
R295	1-249-413-11	CARBON	470 5% 1/4W	R412	1-249-413-11	CARBON	470 5% 1/4W
R301	1-249-408-11	CARBON	180 5% 1/4W	R413	1-249-414-11	CARBON	560 5% 1/4W
R303	1-249-417-11	CARBON	1K 5% 1/4W	R414	1-246-533-00	CARBON	330K 5% 1/4W
R304	1-249-417-11	CARBON	1K 5% 1/4W	R416	1-247-883-00	CARBON	150K 5% 1/4W
R305	1-249-403-11	CARBON	68 5% 1/4W	R417	1-249-417-11	CARBON	1K 5% 1/4W
R306	1-249-433-11	CARBON	22K 5% 1/4W	R418	1-249-419-11	CARBON	1.5K 5% 1/4W
R307	1-249-429-11	CARBON	10K 5% 1/4W	R419	1-249-435-11	CARBON	33K 5% 1/4W
R308	1-249-422-11	CARBON	2.7K 5% 1/4W	R420	1-249-433-11	CARBON	22K 5% 1/4W
R309	1-249-419-11	CARBON	1.5K 5% 1/4W	R421	1-249-420-11	CARBON	1.8K 5% 1/4W
R310	1-249-419-11	CARBON	1.5K 5% 1/4W	R422	1-249-422-11	CARBON	2.7K 5% 1/4W
R311	1-249-418-11	CARBON	1.2K 5% 1/4W	R423	1-247-891-00	CARBON	330K 5% 1/4W
R312	1-249-418-11	CARBON	1.2K 5% 1/4W	R424	1-247-883-00	CARBON	150K 5% 1/4W
R313	1-249-425-11	CARBON	4.7K 5% 1/4W	R425	1-249-421-11	CARBON	2.2K 5% 1/4W
R314	1-249-437-11	CARBON	47K 5% 1/4W	R426	1-249-426-11	CARBON	5.6K 5% 1/4W
R315	1-249-463-11	CARBON	27K 5% 1/4W	R427	1-249-418-11	CARBON	1.2K 5% 1/4W
R316	1-249-417-11	CARBON	1K 5% 1/4W	R428	1-249-429-11	CARBON	10K 5% 1/4W
R317	1-249-437-11	CARBON	47K 5% 1/4W	R429	1-249-441-11	CARBON	100K 5% 1/4W
R318	1-249-425-11	CARBON	4.7K 5% 1/4W	R430	1-249-424-11	CARBON	3.9K 5% 1/4W
R320	1-249-404-00	CARBON	82 5% 1/4W	R431	1-249-424-11	CARBON	3.9K 5% 1/4W
R321	1-247-832-11	CARBON	1.1K 5% 1/4W	R432	1-249-417-11	CARBON	1K 5% 1/4W
R322	1-249-417-11	CARBON	1K 5% 1/4W	R433	1-249-408-11	CARBON	180 5% 1/4W
R325	1-249-429-11	CARBON	10K 5% 1/4W	R434	1-249-433-11	CARBON	22K 5% 1/4W
R326	1-249-429-11	CARBON	10K 5% 1/4W	R435	1-249-432-11	CARBON	18K 5% 1/4W
R350	1-249-413-11	CARBON	470 5% 1/4W	R436	1-249-421-11	CARBON	2.2K 5% 1/4W
R352	1-249-417-11	CARBON	1K 5% 1/4W	R437	1-249-442-11	CARBON	510 5% 1/4W
R355	1-247-870-11	CARBON	43K 5% 1/4W	R438	1-249-423-11	CARBON	3.3K 5% 1/4W
R360	1-249-435-11	CARBON	33K 5% 1/4W	R439	1-247-883-00	CARBON	150K 5% 1/4W
R361	1-249-433-11	CARBON	22K 5% 1/4W	R440	1-247-881-00	CARBON	120K 5% 1/4W
R362	1-249-414-11	CARBON	560 5% 1/4W	R441	1-249-415-11	CARBON	680 5% 1/4W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R442	1-249-424-11	CARBON	3.9K 5% 1/4W	R816	1-249-433-11	CARBON	22K 5% 1/4W
R443	1-249-417-11	CARBON	1K 5% 1/4W	R817	1-249-417-11	CARBON	1K 5% 1/4W
R444	1-249-417-11	CARBON	1K 5% 1/4W	R818	1-247-895-00	CARBON	470K 5% 1/4W
R445	1-249-411-11	CARBON	330 5% 1/4W	R819	1-249-465-11	CARBON	47K 5% 1/4W
R446	1-249-411-11	CARBON	330 5% 1/4W	R821	1-249-413-11	CARBON	470 5% 1/4W
R447	1-249-423-11	CARBON	3.3K 5% 1/4W	R822	1-249-413-11	CARBON	470 5% 1/4W
R448	1-249-417-11	CARBON	1K 5% 1/4W	R823	1-249-417-11	CARBON	1K 5% 1/4W
R449	1-247-691-11	CARBON	18 5% 1/4W	R826	1-249-437-11	CARBON	47K 5% 1/4W
R450	1-249-417-11	CARBON	1K 5% 1/4W	R829	1-249-410-11	CARBON	270 5% 1/4W
R451	1-249-419-11	CARBON	1.5K 5% 1/4W	R830	1-249-437-11	CARBON	47K 5% 1/4W
R452	1-247-844-11	CARBON	3.6K 5% 1/4W	R860	1-249-429-11	CARBON	10K 5% 1/4W
R453	1-249-429-11	CARBON	10K 5% 1/4W	R871	1-249-417-11	CARBON	1K 5% 1/4W
R455	1-249-417-11	CARBON	1K 5% 1/4W	R873	1-249-417-11	CARBON	1K 5% 1/4W
R456	1-249-418-11	CARBON	1.2K 5% 1/4W	R901	1-249-405-11	CARBON	100 5% 1/4W
R481	1-249-431-11	CARBON	15K 5% 1/4W	R902	1-249-405-11	CARBON	100 5% 1/4W
R482	1-249-431-11	CARBON	15K 5% 1/4W	R903	1-249-405-11	CARBON	100 5% 1/4W
R483	1-249-423-11	CARBON	3.3K 5% 1/4W	R904	1-249-405-11	CARBON	100 5% 1/4W
R492	1-249-413-11	CARBON	470 5% 1/4W	R905	1-247-703-11	CARBON	180 5% 1/4W
R493	1-249-417-11	CARBON	1K 5% 1/4W	R906	1-247-703-11	CARBON	180 5% 1/4W
R494	1-249-413-11	CARBON	470 5% 1/4W	R907	1-247-703-11	CARBON	180 5% 1/4W
R601	1-247-818-11	CARBON	300 5% 1/4W	R908	1-247-703-11	CARBON	180 5% 1/4W
R602	1-249-414-11	CARBON	560 5% 1/4W	R909	1-249-404-00	CARBON	82 5% 1/4W
R611	1-249-437-11	CARBON	47K 5% 1/4W	R910	1-249-403-11	CARBON	68 5% 1/4W
R612	1-249-430-11	CARBON	12K 5% 1/4W	R911	1-249-404-00	CARBON	82 5% 1/4W
R613	1-249-429-11	CARBON	10K 5% 1/4W	R912	1-249-403-11	CARBON	68 5% 1/4W
R625	1-249-413-11	CARBON	470 5% 1/4W	R913	1-247-804-11	CARBON	75 5% 1/4W
R626	1-249-411-11	CARBON	330 5% 1/4W	R914	1-247-804-11	CARBON	75 5% 1/4W
R629	1-249-411-11	CARBON	330 5% 1/4W	R915	1-249-421-11	CARBON	2.2K 5% 1/4W
R701	1-249-432-11	CARBON	18K 5% 1/4W	R917	1-249-413-11	CARBON	470 5% 1/4W
R702	1-249-430-11	CARBON	12K 5% 1/4W	R918	1-249-429-11	CARBON	10K 5% 1/4W
R705	1-249-423-11	CARBON	3.3K 5% 1/4W	R919	1-249-429-11	CARBON	10K 5% 1/4W
R706	1-247-726-11	CARBON	33K 5% 1/4W	R922	1-249-425-11	CARBON	4.7K 5% 1/4W
R707	1-247-723-11	CARBON	6.8K 5% 1/4W	R923	1-249-429-11	CARBON	10K 5% 1/4W
R709	1-247-704-11	CARBON	220 5% 1/4W	R924	1-249-425-11	CARBON	4.7K 5% 1/4W
R710	1-249-429-11	CARBON	10K 5% 1/4W	R925	1-249-429-11	CARBON	10K 5% 1/4W
R711	1-249-426-11	CARBON	5.6K 5% 1/4W	R926	1-249-425-11	CARBON	4.7K 5% 1/4W
R712	1-247-726-11	CARBON	33K 5% 1/4W	R927	1-249-425-11	CARBON	4.7K 5% 1/4W
R713	1-249-416-11	CARBON	820 5% 1/4W	R928	1-249-441-11	CARBON	100K 5% 1/4W
R717	1-249-413-11	CARBON	470 5% 1/4W	R929	1-249-396-11	CARBON	18 5% 1/4W
R761	1-249-420-11	CARBON	1.8K 5% 1/4W	R930	1-249-429-11	CARBON	10K 5% 1/4W
R762	1-249-414-11	CARBON	560 5% 1/4W	R931	1-249-425-11	CARBON	4.7K 5% 1/4W
R801	1-249-421-11	CARBON	2.2K 5% 1/4W	R932	1-249-429-11	CARBON	10K 5% 1/4W
R802	1-249-412-11	CARBON	390 5% 1/4W	R933	1-249-429-11	CARBON	10K 5% 1/4W
R803	1-249-433-11	CARBON	22K 5% 1/4W	R934	1-249-429-11	CARBON	10K 5% 1/4W
R804	1-249-423-11	CARBON	3.3K 5% 1/4W	R935	1-249-425-11	CARBON	4.7K 5% 1/4W
R805	1-249-414-11	CARBON	560 5% 1/4W	R936	1-249-429-11	CARBON	10K 5% 1/4W
R806	1-249-417-11	CARBON	1K 5% 1/4W	R937	1-249-429-11	CARBON	10K 5% 1/4W
R807	1-249-410-11	CARBON	270 5% 1/4W	R938	1-249-429-11	CARBON	10K 5% 1/4W
R811	1-249-417-11	CARBON	1K 5% 1/4W	R939	1-249-429-11	CARBON	10K 5% 1/4W
R812	1-249-412-11	CARBON	390 5% 1/4W	R940	1-249-429-11	CARBON	10K 5% 1/4W
R813	1-249-424-11	CARBON	3.9K 5% 1/4W	R941	1-249-423-11	CARBON	3.3K 5% 1/4W
R814	1-249-417-11	CARBON	1K 5% 1/4W	R942	1-249-429-11	CARBON	10K 5% 1/4W
R815	1-249-408-11	CARBON	180 5% 1/4W	R944	1-249-429-11	CARBON	10K 5% 1/4W

When indicating parts by reference number, please include the board name.

Note:

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

VI-40

CH-45

EQ-3

HJ-5(A)

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>VARIABLE RESISTOR</u>				<u>RESISTOR</u>			
RV151	1-228-989-00	RES, ADJ, CARBON 470		R401	1-216-073-00	METAL GLAZE 10K 5%	1/10W
RV201	1-228-989-00	RES, ADJ, CARBON 470		R402	1-216-073-00	METAL GLAZE 10K 5%	1/10W
RV202	1-228-991-00	RES, ADJ, CARBON 2.2K		R403	1-216-089-00	METAL GLAZE 47K 5%	1/10W
RV203	1-228-990-00	RES, ADJ, CARBON 1K		R404	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
RV204	1-228-991-00	RES, ADJ, CARBON 2.2K		*****			
RV301	1-228-993-00	RES, ADJ, CARBON 4.7K		*A-6724-601-A EQ-3 BOARD, COMPLETE			
RV302	1-228-990-00	RES, ADJ, CARBON 1K		*****			
RV401	1-228-996-00	RES, ADJ, CARBON 47K		<u>CAPACITOR</u>			
RV402	1-228-990-00	RES, ADJ, CARBON 1K		C201	1-163-119-00	CERAMIC CHIP 120PF	5% 50V
RV403	1-228-994-00	RES, ADJ, CARBON 10K		C202	1-163-107-00	CERAMIC CHIP 39PF	5% 50V
RV601	1-228-990-00	RES, ADJ, CARBON 1K		C203	1-163-021-00	CERAMIC CHIP 0.01MF	50V
RV602	1-228-994-00	RES, ADJ, CARBON 10K		<u>COIL</u>			
RV701	1-228-993-00	RES, ADJ, CARBON 4.7K		L201	1-408-978-21	INDUCTOR 47UH	
RV702	1-228-989-00	RES, ADJ, CARBON 470		<u>TRANSISTOR</u>			
RV703	1-228-994-00	RES, ADJ, CARBON 10K		Q201	8-729-100-66	TRANSISTOR 2SC1623	
RV704	1-228-990-00	RES, ADJ, CARBON 1K		<u>RESISTOR</u>			
RV705	1-228-990-00	RES, ADJ, CARBON 1K		R201	1-216-748-11	METAL GLAZE 39K 5%	1/10W
RV706	1-228-993-00	RES, ADJ, CARBON 4.7K		R202	1-216-085-00	METAL GLAZE 33K 5%	1/10W
RV707	1-228-993-00	RES, ADJ, CARBON 4.7K		R203	1-216-049-00	METAL GLAZE 1K 5%	1/10W
RV708	1-228-993-00	RES, ADJ, CARBON 4.7K		R204	1-216-049-00	METAL GLAZE 1K 5%	1/10W
RV802	1-228-998-00	RES, ADJ, CARBON 220K		R205	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
RV804	1-228-993-00	RES, ADJ, CARBON 4.7K		R206	1-216-049-00	METAL GLAZE 1K 5%	1/10W
RV805	1-228-993-00	RES, ADJ, CARBON 4.7K		R207	1-216-295-00	METAL GLAZE 0 5%	1/10W
RV806	1-228-998-00	RES, ADJ, CARBON 220K		*****			
RV809	1-228-991-00	RES, ADJ, CARBON 2.2K		*A-6724-605-A HJ-5(A) BOARD, COMPLETE			
RV810	1-228-989-00	RES, ADJ, CARBON 470		*****			
<u>SWITCH</u>				<u>CAPACITOR</u>			
S901	1-553-725-21	SWITCH, SLIDE (V INPUT SELECT)		C201	1-124-236-00	ELECT 47MF	20% 10V
<u>TRANSFORMER</u>				C202	1-102-824-00	CERAMIC 470PF	5% 50V
T401	1-404-410-00	COIL, TRAP		<u>DIODE</u>			
<u>CRYSTAL</u>				D201	8-719-911-19	DIODE 1SS119	
X401	1-567-505-11	CRYSTAL, OSC		D202	8-719-911-19	DIODE 1SS119	
*****				<u>TRANSISTOR</u>			
*A-6724-600-A CH-45 BOARD, COMPLETE				Q201	8-729-900-89	TRANSISTOR DTC144ES	
*****				Q202	8-729-900-89	TRANSISTOR DTC144ES	
<u>CAPACITOR</u>				<u>RESISTOR</u>			
C401	1-163-021-00	CERAMIC CHIP 0.01MF.	50V	R201	1-249-414-11	CARBON 560 5%	1/4W
C402	1-163-105-00	CERAMIC CHIP 33PF	5% 50V	R202	1-249-425-11	CARBON 4.7K 5%	1/4W
<u>TRANSISTOR</u>				R203	1-249-429-11	CARBON 10K 5%	1/4W
Q401	8-729-100-66	TRANSISTOR 2SC1623					
Q402	8-729-312-22	TRANSISTOR 2SA1122					

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
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*A-6724-617-A RF-20 BOARD, COMPLETE

CAPACITOR

C601	1-101-006-00	CERAMIC	0.047MF	50V
C602	1-101-006-00	CERAMIC	0.047MF	50V
C625	1-102-961-00	CERAMIC	27PF	5% 50V

TRANSISTOR

Q601	8-729-178-54	TRANSISTOR	2SC2785
Q602	8-729-178-54	TRANSISTOR	2SC2785
Q603	8-729-900-89	TRANSISTOR	DTC144ES
Q604	8-729-900-89	TRANSISTOR	DTC144ES
Q615	8-729-900-89	TRANSISTOR	DTC144ES

RESISTOR

R601	1-249-415-11	CARBON	680	5%	1/4W
R602	1-249-418-11	CARBON	1.2K	5%	1/4W
R603	1-249-429-11	CARBON	10K	5%	1/4W
R604	1-249-429-11	CARBON	10K	5%	1/4W
R605	1-249-429-11	CARBON	10K	5%	1/4W
R606	1-249-429-11	CARBON	10K	5%	1/4W
R631	1-249-429-11	CARBON	10K	5%	1/4W
R632	1-249-405-11	CARBON	100	5%	1/4W

*A-6724-618-A CH-49 BOARD, COMPLETE

CAPACITOR

C473	1-102-125-00	CERAMIC	0.0047MF	10%	50V
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TRANSISTOR

Q416	8-729-900-36	TRANSISTOR	DTC124ES
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RESISTOR

R495	1-249-422-11	CARBON	2.7K	5%	1/4W
R496	1-249-413-11	CARBON	470	5%	1/4W

*1-624-682-14 VS-29 BOARD

CAPACITOR

C831	1-163-021-00	CERAMIC CHIP	0.01MF	50V
C832	1-163-021-00	CERAMIC CHIP	0.01MF	50V

TRANSISTOR

Q811	8-729-100-66	TRANSISTOR	2SC1623
Q812	8-729-100-66	TRANSISTOR	2SC1623

Remark

Ref.No

Part No.

Description

Remark

RESISTOR

R831	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R832	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R833	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R834	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R835	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R836	1-216-043-00	METAL GLAZE	560	5%	1/10W
R850	1-216-295-00	METAL GLAZE	0	5%	1/10W
R851	1-216-295-00	METAL GLAZE	0	5%	1/10W
R852	1-216-295-00	METAL GLAZE	0	5%	1/10W

*A-6713-331-A AU-38 BOARD, COMPLETE

*2-522-807-11 RETAINER (B), MICROPHONE

CAPACITOR

C001	1-102-973-00	CERAMIC	100PF	5%	50V
C002	1-101-003-00	CERAMIC	0.0047MF		50V
C003	1-101-003-00	CERAMIC	0.0047MF		50V
C004	1-124-443-00	ELECT	100MF	20%	10V
C005	1-130-471-00	MYLAR	0.001MF	5%	50V
C006	1-130-482-00	MYLAR	0.0082MF	5%	50V
C007	1-130-477-00	MYLAR	0.0033MF	5%	50V
C008	1-102-824-00	CERAMIC	470PF	5%	50V
C009	1-124-927-11	ELECT	4.7MF	20%	50V
C010	1-124-927-11	ELECT	4.7MF	20%	50V

C011	1-101-003-00	CERAMIC	0.0047MF		50V
C012	1-101-003-00	CERAMIC	0.0047MF		50V
C013	1-124-963-11	ELECT	33MF	20%	16V
C014	1-101-003-00	CERAMIC	0.0047MF		50V
C015	1-101-003-00	CERAMIC	0.0047MF		50V

C016	1-101-003-00	CERAMIC	0.0047MF		50V
C017	1-101-003-00	CERAMIC	0.0047MF		50V
C018	1-102-973-00	CERAMIC	100PF	5%	50V
C019	1-124-443-00	ELECT	100MF	20%	10V
C026	1-124-443-00	ELECT	100MF	20%	10V

C027	1-101-003-00	CERAMIC	0.0047MF		50V
C028	1-124-473-11	ELECT	1000MF	20%	10V
C029	1-124-180-00	ELECT	33MF	20%	25V
C031	1-102-949-00	CERAMIC	12PF	5%	50V
C032	1-130-485-00	MYLAR	0.015MF	5%	50V

C033	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C034	1-130-485-00	MYLAR	0.015MF	5%	50V
C035	1-130-498-00	MYLAR	0.18MF	5%	50V
C036	1-130-491-00	MYLAR	0.047MF	5%	50V
C037	1-130-469-00	MYLAR	680PF	5%	50V

C038	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C039	1-130-475-00	MYLAR	0.0022MF	5%	50V
C040	1-130-493-00	MYLAR	0.068MF	5%	50V
C041	1-130-485-00	MYLAR	0.015MF	5%	50V
C042	1-124-499-11	ELECT	1MF	20%	50V

Ref.No	Part No.	Description			Remark	Ref.No	Part No.	Description			Remark
C043	1-123-875-11	ELECT	10MF	20%	50V	C223	1-130-471-00	MYLAR	0.001MF	5%	50V
C050	1-101-003-00	CERAMIC	0.0047MF		50V	C224	1-124-925-11	ELECT	2.2MF	20%	50V
C051	1-101-003-00	CERAMIC	0.0047MF		50V	C226	1-124-443-00	ELECT	100MF	20%	10V
C053	1-124-908-11	ELECT	22MF	20%	25V	C227	1-101-003-00	CERAMIC	0.0047MF		50V
C054	1-101-003-00	CERAMIC	0.0047MF		50V	C228	1-124-473-11	ELECT	1000MF	20%	10V
C056	1-123-382-00	ELECT	3.3MF	20%	50V	C229	1-124-180-00	ELECT	33MF	20%	25V
C057	1-123-382-00	ELECT	3.3MF	20%	50V	C231	1-102-949-00	CERAMIC	12PF	5%	50V
C058	1-101-003-00	CERAMIC	0.0047MF		50V	C232	1-130-485-00	MYLAR	0.015MF	5%	50V
C059	1-101-003-00	CERAMIC	0.0047MF		50V	C233	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C060	1-101-003-00	CERAMIC	0.0047MF		50V	C234	1-130-485-00	MYLAR	0.015MF	5%	50V
C061	1-101-003-00	CERAMIC	0.0047MF		50V	C235	1-130-498-00	MYLAR	0.18MF	5%	50V
C064	1-101-003-00	CERAMIC	0.0047MF		50V	C236	1-130-491-00	MYLAR	0.047MF	5%	50V
C065	1-124-443-00	ELECT	100MF	20%	10V	C237	1-130-469-00	MYLAR	680PF	5%	50V
C066	1-101-003-00	CERAMIC	0.0047MF		50V	C238	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C067	1-124-472-11	ELECT	470MF	20%	10V	C239	1-130-475-00	MYLAR	0.0022MF	5%	50V
C099	1-124-446-11	ELECT	47MF	20%	10V	C240	1-130-493-00	MYLAR	0.068MF	5%	50V
C103	1-124-288-00	ELECT	22MF	20%	10V	C241	1-130-485-00	MYLAR	0.015MF	5%	50V
C104	1-130-497-00	MYLAR	0.15MF	5%	50V	C242	1-124-499-11	ELECT	1MF	20%	50V
C105	1-130-497-00	MYLAR	0.15MF	5%	50V	C243	1-123-875-11	ELECT	10MF	20%	50V
C107	1-124-288-00	ELECT	22MF	20%	10V	C244	1-101-003-00	CERAMIC	0.0047MF		50V
C109	1-101-003-00	CERAMIC	0.0047MF		50V	C245	1-124-444-00	ELECT	220MF	20%	10V
C110	1-101-003-00	CERAMIC	0.0047MF		50V	C250	1-101-003-00	CERAMIC	0.0047MF		50V
C111	1-101-003-00	CERAMIC	0.0047MF		50V	C251	1-101-003-00	CERAMIC	0.0047MF		50V
C112	1-101-003-00	CERAMIC	0.0047MF		50V	C253	1-124-908-11	ELECT	22MF	20%	25V
C113	1-124-908-11	ELECT	22MF	20%	25V	C254	1-101-003-00	CERAMIC	0.0047MF		50V
C114	1-101-003-00	CERAMIC	0.0047MF		50V	C256	1-123-382-00	ELECT	3.3MF	20%	50V
C115	1-124-908-11	ELECT	22MF	20%	25V	C257	1-123-382-00	ELECT	3.3MF	20%	50V
C116	1-124-908-11	ELECT	22MF	20%	25V	C258	1-101-003-00	CERAMIC	0.0047MF		50V
C151	1-124-446-11	ELECT	47MF	20%	10V	C259	1-101-003-00	CERAMIC	0.0047MF		50V
C152	1-124-443-00	ELECT	100MF	20%	10V	C260	1-101-003-00	CERAMIC	0.0047MF		50V
C153	1-124-443-00	ELECT	100MF	20%	10V	C261	1-101-003-00	CERAMIC	0.0047MF		50V
C201	1-102-973-00	CERAMIC	100PF	5%	50V	C299	1-124-446-11	ELECT	47MF	20%	10V
C202	1-101-003-00	CERAMIC	0.0047MF		50V	C351	1-124-446-11	ELECT	47MF	20%	10V
C203	1-101-003-00	CERAMIC	0.0047MF		50V	C401	1-130-479-00	MYLAR	0.0047MF	5%	50V
C204	1-124-443-00	ELECT	100MF	20%	10V	C402	1-130-476-00	MYLAR	0.0027MF	5%	50V
C205	1-130-471-00	MYLAR	0.001MF	5%	50V	C403	1-123-875-11	ELECT	10MF	20%	50V
C206	1-130-482-00	MYLAR	0.0082MF	5%	50V	C404	1-130-476-00	MYLAR	0.0027MF	5%	50V
C207	1-130-477-00	MYLAR	0.0033MF	5%	50V	C405	1-130-471-00	MYLAR	0.001MF	5%	50V
C208	1-102-824-00	CERAMIC	470PF	5%	50V	C406	1-130-471-00	MYLAR	0.001MF	5%	50V
C209	1-124-927-11	ELECT	4.7MF	20%	50V	C410	1-124-444-00	ELECT	220MF	20%	6.3V
C210	1-124-927-11	ELECT	4.7MF	20%	50V	C421	1-123-875-11	ELECT	10MF	20%	50V
C211	1-101-003-00	CERAMIC	0.0047MF		50V	C422	1-123-875-11	ELECT	10MF	20%	50V
C212	1-101-003-00	CERAMIC	0.0047MF		50V	C501	1-124-446-11	ELECT	47MF	20%	10V
C213	1-124-963-11	ELECT	33MF	20%	16V	C502	1-102-973-00	CERAMIC	100PF	5%	50V
C214	1-101-003-00	CERAMIC	0.0047MF		50V	C503	1-124-444-00	ELECT	220MF	20%	10V
C215	1-101-003-00	CERAMIC	0.0047MF		50V	C504	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C216	1-101-003-00	CERAMIC	0.0047MF		50V	C505	1-124-446-11	ELECT	47MF	20%	10V
C217	1-101-003-00	CERAMIC	0.0047MF		50V	C506	1-102-973-00	CERAMIC	100PF	5%	50V
C218	1-102-973-00	CERAMIC	100PF	5%	50V	C507	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C219	1-124-443-00	ELECT	100MF	20%	10V	C510	1-124-473-11	ELECT	1000MF	20%	10V
C220	1-130-495-00	MYLAR	0.1MF	5%	50V	C511	1-124-473-11	ELECT	1000MF	20%	10V
C221	1-124-927-11	ELECT	4.7MF	20%	50V	C520	1-124-446-11	ELECT	47MF	20%	10V
C222	1-130-483-00	MYLAR	0.01MF	5%	50V	C521	1-124-902-00	ELECT	0.47MF	20%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
D722	8-719-911-19	DIODE 1SS119		Q201	8-729-900-89	TRANSISTOR DTC144ES	
D725	8-719-911-19	DIODE 1SS119		Q203	8-729-900-89	TRANSISTOR DTC144ES	
D730	8-719-911-19	DIODE 1SS119		Q351	8-729-900-89	TRANSISTOR DTC144ES	
D731	8-719-911-19	DIODE 1SS119		Q352	8-729-900-89	TRANSISTOR DTC144ES	
D792	8-719-100-30	ZENER DIODE RD5.1EB2		Q353	8-729-900-89	TRANSISTOR DTC144ES	
D794	8-719-100-30	ZENER DIODE RD5.1EB2		Q401	8-729-117-54	TRANSISTOR 2SA1175	
D795	8-719-100-30	ZENER DIODE RD5.1EB2		Q402	8-729-178-54	TRANSISTOR 2SC2785	
D796	8-719-100-30	ZENER DIODE RD5.1EB2		Q403	8-729-117-54	TRANSISTOR 2SA1175	
D797	8-719-100-30	ZENER DIODE RD5.1EB2		Q404	8-729-178-54	TRANSISTOR 2SC2785	
D798	8-719-100-30	ZENER DIODE RD5.1EB2		Q501	8-729-900-89	TRANSISTOR DTC144ES	
<u>FILTER</u>				Q507	8-729-900-89	TRANSISTOR DTC144ES	
FL001	1-235-372-11	FILTER, BAND PASS		Q511	8-729-900-89	TRANSISTOR DTC144ES	
FL002	1-235-373-11	FILTER, BAND PASS		Q512	8-729-900-89	TRANSISTOR DTC144ES	
FL003	1-235-374-11	FILTER, BAND PASS		Q602	8-729-900-89	TRANSISTOR DTC144ES	
FL004	1-235-375-11	FILTER, BAND PASS		Q607	8-729-900-89	TRANSISTOR DTC144ES	
FL101	1-464-400-11	L.P.F UNIT		Q701	8-729-177-33	TRANSISTOR 2SD773-4	
FL102	1-235-370-11	FILTER (LPF)		Q704	8-729-117-54	TRANSISTOR 2SA1175	
FL202	1-235-369-11	FILTER (LPF)		Q706	8-729-900-65	TRANSISTOR DTA144ES	
<u>IC</u>				Q708	8-729-113-33	TRANSISTOR 2SB733	
IC001	8-752-009-71	IC CX20097A		Q709	8-729-900-89	TRANSISTOR DTC144ES	
IC002	8-752-010-51	IC CX20105A		Q710	8-729-900-89	TRANSISTOR DTC144ES	
IC003	8-752-010-40	IC CX20104		Q711	8-729-900-89	TRANSISTOR DTC144ES	
IC004	8-752-320-61	IC CXD1049P		Q712	8-729-900-89	TRANSISTOR DTC144ES	
IC151	8-759-602-48	IC M5201L		Q713	8-729-900-89	TRANSISTOR DTC144ES	
IC202	8-752-010-51	IC CX20105A		Q714	8-729-900-89	TRANSISTOR DTC144ES	
IC351	8-759-602-48	IC M5201L		Q721	8-729-900-89	TRANSISTOR DTC144ES	
IC501	8-759-602-48	IC M5201L		Q723	8-729-900-65	TRANSISTOR DTA144ES	
IC502	8-759-602-48	IC M5201L		Q726	8-729-900-89	TRANSISTOR DTC144ES	
IC503	8-759-601-02	IC M5218P		Q727	8-729-900-89	TRANSISTOR DTC144ES	
IC504	8-759-240-53	IC TC4053BP		Q728	8-729-900-65	TRANSISTOR DTA144ES	
IC505	8-759-601-02	IC M5218P		Q729	8-729-178-54	TRANSISTOR 2SC2785	
IC506	8-759-240-52	IC TC4052BP		Q731	8-729-900-61	TRANSISTOR DTA114ES	
IC507	8-759-602-48	IC M5201L		Q732	8-729-900-89	TRANSISTOR DTC144ES	
IC510	8-759-145-58	IC UPC4558C		Q751	8-729-178-54	TRANSISTOR 2SC2785	
IC511	8-759-946-44	IC TK15120M		Q752	8-729-178-54	TRANSISTOR 2SC2785	
IC601	8-759-602-48	IC M5201L		Q761	8-729-900-89	TRANSISTOR DTC144ES	
IC602	8-759-602-48	IC M5201L		Q762	8-729-900-63	TRANSISTOR DTA124ES	
IC607	8-759-602-48	IC M5201L		Q763	8-729-178-54	TRANSISTOR 2SC2785	
IC701	8-759-602-66	IC M5230L-A		Q764	8-729-178-54	TRANSISTOR 2SC2785	
IC710	8-759-602-67	IC M5278L05		Q765	8-729-178-54	TRANSISTOR 2SC2785	
IC801	8-759-602-48	IC M5201L		Q767	8-729-178-54	TRANSISTOR 2SC2785	
IC802	8-759-240-52	IC TC4052BP		Q801	8-729-900-36	TRANSISTOR DTC124ES	
<u>COIL</u>				<u>RESISTOR</u>			
L201	1-410-120-11	INDUCTOR 1.2MMH		R001	1-247-898-11	CARBON 620K 5% 1/4W	
L751	1-408-421-00	INDUCTOR 100UH		R006	1-215-429-00	METAL 2.2K 1% 1/6W	
<u>TRANSISTOR</u>				R008	1-215-458-00	METAL 36K 1% 1/6W	
Q151	8-729-900-89	TRANSISTOR DTC144ES		R010	1-249-430-11	CARBON 12K 5% 1/4W	
Q152	8-729-900-89	TRANSISTOR DTC144ES		R011	1-215-441-00	METAL 6.8K 1% 1/6W	
Q153	8-729-900-89	TRANSISTOR DTC144ES		R021	1-249-423-11	CARBON 3.3K 5% 1/4W	
				R036	1-247-888-11	CARBON 240K 5% 1/4W	
				R040	1-215-437-00	METAL 4.7K 1% 1/6W	
				R045	1-249-405-11	CARBON 100 5% 1/4W	

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R046	1-249-410-11	CARBON	270 5% 1/4W	R265	1-247-888-11	CARBON	240K 5% 1/4W
R047	1-249-435-11	CARBON	33K 5% 1/4W	R266	1-249-413-11	CARBON	470 5% 1/4W
R050	1-247-866-11	CARBON	30K 5% 1/4W	R269	1-215-438-00	METAL	5.1K 1% 1/6W
R052	1-215-453-00	METAL	22K 1% 1/6W	R283	1-215-441-00	METAL	6.8K 1% 1/6W
R053	1-247-864-11	CARBON	24K 5% 1/4W	R351	1-249-421-11	CARBON	2.2K 5% 1/4W
R054	1-249-429-11	CARBON	10K 5% 1/4W	R352	1-249-415-11	CARBON	680 5% 1/4W
R055	1-247-866-11	CARBON	30K 5% 1/4W	R353	1-249-435-11	CARBON	33K 5% 1/4W
R059	1-249-429-11	CARBON	10K 5% 1/4W	R354	1-247-838-00	CARBON	2K 5% 1/4W
R060	1-249-417-11	CARBON	1K 5% 1/4W	R355	1-247-895-00	CARBON	470K 5% 1/4W
R061	1-249-417-11	CARBON	1K 5% 1/4W	R356	1-247-895-00	CARBON	470K 5% 1/4W
R062	1-249-417-11	CARBON	1K 5% 1/4W	R357	1-247-895-00	CARBON	470K 5% 1/4W
R063	1-249-417-11	CARBON	1K 5% 1/4W	R358	1-249-410-11	CARBON	270 5% 1/4W
R064	1-249-410-11	CARBON	270 5% 1/4W	R359	1-249-421-11	CARBON	2.2K 5% 1/4W
R065	1-247-888-11	CARBON	240K 5% 1/4W	R360	1-249-429-11	CARBON	10K 5% 1/4W
R066	1-249-413-11	CARBON	470 5% 1/4W	R401	1-249-429-11	CARBON	10K 5% 1/4W
R069	1-215-442-00	METAL	7.5K 1% 1/6W	R405	1-249-439-11	CARBON	68K 5% 1/4W
R083	1-215-439-00	METAL	5.6K 1% 1/6W	R501	1-247-725-11	CARBON	10K 5% 1/4W
R085	1-249-431-11	CARBON	15K 5% 1/4W	R502	1-247-887-00	CARBON	220K 5% 1/4W
R095	1-249-429-11	CARBON	10K 5% 1/4W	R503	1-249-439-11	CARBON	68K 5% 1/4W
R101	1-249-431-11	CARBON	15K 5% 1/4W	R504	1-249-421-11	CARBON	2.2K 5% 1/4W
R111	1-249-431-11	CARBON	15K 5% 1/4W	R505	1-249-421-11	CARBON	2.2K 5% 1/4W
R112	1-249-406-11	CARBON	120 5% 1/4W	R506	1-247-725-11	CARBON	10K 5% 1/4W
R113	1-249-441-11	CARBON	100K 5% 1/4W	R507	1-247-887-00	CARBON	220K 5% 1/4W
R114	1-247-860-11	CARBON	16K 5% 1/4W	R508	1-249-439-11	CARBON	68K 5% 1/4W
R115	1-247-860-11	CARBON	16K 5% 1/4W	R511	1-249-421-11	CARBON	2.2K 5% 1/4W
R116	1-249-417-11	CARBON	1K 5% 1/4W	R512	1-249-405-11	CARBON	100 5% 1/4W
R119	1-249-417-11	CARBON	1K 5% 1/4W	R513	1-249-421-11	CARBON	2.2K 5% 1/4W
R121	1-249-417-11	CARBON	1K 5% 1/4W	R514	1-249-429-11	CARBON	10K 5% 1/4W
R123	1-249-417-11	CARBON	1K 5% 1/4W	R520	1-249-427-11	CARBON	6.8K 5% 1/4W
R151	1-249-421-11	CARBON	2.2K 5% 1/4W	R521	1-249-437-11	CARBON	47K 5% 1/4W
R152	1-249-415-11	CARBON	680 5% 1/4W	R522	1-249-437-11	CARBON	47K 5% 1/4W
R153	1-249-435-11	CARBON	33K 5% 1/4W	R530	1-249-437-11	CARBON	47K 5% 1/4W
R154	1-247-838-00	CARBON	2K 5% 1/4W	R531	1-249-431-11	CARBON	15K 5% 1/4W
R155	1-247-895-00	CARBON	470K 5% 1/4W	R540	1-249-429-11	CARBON	10K 5% 1/4W
R156	1-247-895-00	CARBON	470K 5% 1/4W	R541	1-249-423-11	CARBON	3.3K 5% 1/4W
R157	1-247-895-00	CARBON	470K 5% 1/4W	R542	1-249-429-11	CARBON	10K 5% 1/4W
R158	1-249-410-11	CARBON	270 5% 1/4W	R543	1-249-434-11	CARBON	27K 5% 1/4W
R159	1-249-421-11	CARBON	2.2K 5% 1/4W	R544	1-249-429-11	CARBON	10K 5% 1/4W
R160	1-249-429-11	CARBON	10K 5% 1/4W	R545	1-249-423-11	CARBON	3.3K 5% 1/4W
R206	1-215-432-00	METAL	3K 1% 1/6W	R551	1-214-723-00	CARBON	560 5% 1/4W
R208	1-215-457-00	METAL	33K 1% 1/6W	R552	1-249-437-11	CARBON	47K 5% 1/4W
R210	1-249-427-11	CARBON	6.8K 5% 1/4W	R553	1-214-729-00	CARBON	1K 5% 1/4W
R211	1-215-439-00	METAL	5.6K 1% 1/6W	R554	1-214-729-00	CARBON	1K 5% 1/4W
R212	1-249-436-11	CARBON	39K 5% 1/4W	R555	1-249-432-11	CARBON	18K 5% 1/4W
R221	1-249-423-11	CARBON	3.3K 5% 1/4W	R561	1-249-417-11	CARBON	1K 5% 1/4W
R236	1-247-888-11	CARBON	240K 5% 1/4W	R564	1-249-429-11	CARBON	10K 5% 1/4W
R245	1-249-405-11	CARBON	100 5% 1/4W	R571	1-249-429-11	CARBON	10K 5% 1/4W
R250	1-247-864-11	CARBON	24K 5% 1/4W	R572	1-249-429-11	CARBON	10K 5% 1/4W
R251	1-249-417-11	CARBON	1K 5% 1/4W	R573	1-249-429-11	CARBON	10K 5% 1/4W
R252	1-215-453-00	METAL	22K 1% 1/6W	R580	1-249-429-11	CARBON	10K 5% 1/4W
R254	1-249-441-11	CARBON	100K 5% 1/4W	R581	1-249-429-11	CARBON	10K 5% 1/4W
R255	1-247-864-11	CARBON	24K 5% 1/4W	R582	1-249-429-11	CARBON	10K 5% 1/4W
R264	1-249-410-11	CARBON	270 5% 1/4W	R583	1-249-429-11	CARBON	10K 5% 1/4W

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R584	1-249-429-11	CARBON	10K 5% 1/4W	R718	1-249-433-11	CARBON	22K 5% 1/4W
R585	1-249-429-11	CARBON	10K 5% 1/4W	R719	1-215-445-00	METAL	10K 1% 1/6W
R601	1-247-725-11	CARBON	10K 5% 1/4W	R720	1-249-428-11	CARBON	8.2K 5% 1/4W
R602	1-247-887-00	CARBON	220K 5% 1/4W	R721	1-249-408-11	CARBON	180 5% 1/4W
R603	1-249-439-11	CARBON	68K 5% 1/4W	R722	1-249-429-11	CARBON	10K 5% 1/4W
R604	1-249-421-11	CARBON	2.2K 5% 1/4W	R723	1-249-426-11	CARBON	5.6K 5% 1/4W
R605	1-249-421-11	CARBON	2.2K 5% 1/4W	R724	1-249-422-11	CARBON	2.7K 5% 1/4W
R606	1-247-725-11	CARBON	10K 5% 1/4W	R726	1-249-429-11	CARBON	10K 5% 1/4W
R607	1-247-887-00	CARBON	220K 5% 1/4W	R728	1-249-434-11	CARBON	27K 5% 1/4W
R608	1-249-439-11	CARBON	68K 5% 1/4W	R729	1-249-435-11	CARBON	33K 5% 1/4W
R611	1-249-421-11	CARBON	2.2K 5% 1/4W	R730	1-249-435-11	CARBON	33K 5% 1/4W
R612	1-249-405-11	CARBON	100 5% 1/4W	R731	1-249-433-11	CARBON	22K 5% 1/4W
R613	1-249-421-11	CARBON	2.2K 5% 1/4W	R732	1-249-435-11	CARBON	33K 5% 1/4W
R614	1-249-429-11	CARBON	10K 5% 1/4W	R733	1-249-429-11	CARBON	10K 5% 1/4W
R636	1-249-411-11	CARBON	330 5% 1/4W	R751	1-247-702-11	CARBON	150 5% 1/4W
R637	1-249-411-11	CARBON	330 5% 1/4W	R752	1-247-702-11	CARBON	150 5% 1/4W
R640	1-249-429-11	CARBON	10K 5% 1/4W	R753	1-249-404-00	CARBON	82 5% 1/4W
R641	1-249-423-11	CARBON	3.3K 5% 1/4W	R754	1-249-404-00	CARBON	82 5% 1/4W
R642	1-249-429-11	CARBON	10K 5% 1/4W	R755	1-247-804-11	CARBON	75 5% 1/4W
R643	1-249-429-11	CARBON	10K 5% 1/4W	R761	1-249-405-11	CARBON	100 5% 1/4W
R644	1-249-434-11	CARBON	27K 5% 1/4W	R762	1-249-416-11	CARBON	820 5% 1/4W
R645	1-249-423-11	CARBON	3.3K 5% 1/4W	R763	1-249-433-11	CARBON	22K 5% 1/4W
R651	1-214-723-00	CARBON	560 5% 1/4W	R764	1-249-429-11	CARBON	10K 5% 1/4W
R652	1-249-437-11	CARBON	47K 5% 1/4W	R765	1-249-406-11	CARBON	120 5% 1/4W
R653	1-214-729-00	CARBON	1K 5% 1/4W	R766	1-249-423-11	CARBON	3.3K 5% 1/4W
R654	1-214-729-00	CARBON	1K 5% 1/4W	R767	1-249-429-11	CARBON	10K 5% 1/4W
R655	1-249-432-11	CARBON	18K 5% 1/4W	R768	1-249-437-11	CARBON	47K 5% 1/4W
R661	1-249-417-11	CARBON	1K 5% 1/4W	R769	1-249-429-11	CARBON	10K 5% 1/4W
R664	1-249-429-11	CARBON	10K 5% 1/4W	R780	1-249-422-11	CARBON	2.7K 5% 1/4W
R671	1-249-429-11	CARBON	10K 5% 1/4W	R781	1-249-425-11	CARBON	4.7K 5% 1/4W
R672	1-249-429-11	CARBON	10K 5% 1/4W	R806	1-249-429-11	CARBON	10K 5% 1/4W
R673	1-249-429-11	CARBON	10K 5% 1/4W	R807	1-249-433-11	CARBON	22K 5% 1/4W
R680	1-249-429-11	CARBON	10K 5% 1/4W	R808	1-249-430-11	CARBON	12K 5% 1/4W
R681	1-249-429-11	CARBON	10K 5% 1/4W	R809	1-249-417-11	CARBON	1K 5% 1/4W
R682	1-249-429-11	CARBON	10K 5% 1/4W	R810	1-249-439-11	CARBON	68K 5% 1/4W
R683	1-249-429-11	CARBON	10K 5% 1/4W	R812	1-249-429-11	CARBON	10K 5% 1/4W
R684	1-249-429-11	CARBON	10K 5% 1/4W	R813	1-249-435-11	CARBON	33K 5% 1/4W
R685	1-249-429-11	CARBON	10K 5% 1/4W	R815	1-249-414-11	CARBON	560 5% 1/4W
R692	1-249-426-11	CARBON	5.6K 5% 1/4W	R816	1-249-441-11	CARBON	100K 5% 1/4W
R701	1-215-445-00	METAL	10K 1% 1/6W	R820	1-249-431-11	CARBON	15K 5% 1/4W
R703	1-215-445-00	METAL	10K 1% 1/6W	R821	1-249-424-11	CARBON	3.9K 5% 1/4W
R704	1-215-433-00	METAL	3.3K 1% 1/6W	R822	1-249-437-11	CARBON	47K 5% 1/4W
R705	1-247-903-00	CARBON	1M 5% 1/4W	R920	1-249-431-11	CARBON	15K 5% 1/4W
R706	1-249-441-11	CARBON	100K 5% 1/4W				
R707	1-249-409-11	CARBON	220 5% 1/4W				
R710	1-249-414-11	CARBON	560 5% 1/4W				
R711	1-249-425-11	CARBON	4.7K 5% 1/4W				
R712	1-249-429-11	CARBON	10K 5% 1/4W				
R713	1-249-433-11	CARBON	22K 5% 1/4W				
R714	1-249-417-11	CARBON	1K 5% 1/4W				
R715	1-249-435-11	CARBON	33K 5% 1/4W				
R716	1-249-417-11	CARBON	1K 5% 1/4W				
R717	1-249-429-11	CARBON	10K 5% 1/4W				

CRYSTAL

X001 1-567-262-11 VIBRATOR, CRYSTAL 150KHz

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
CN410	*1-560-891-00	PIN, CONNECTOR 3P		D027	8-719-911-19	DIODE 1SS119	
CN411	*1-560-891-00	PIN, CONNECTOR 3P		D301	8-719-911-19	DIODE 1SS119	
CN412	*1-564-005-00	PIN, CONNECTOR 6P		D302	8-719-911-19	DIODE 1SS119	
CN413	*1-564-011-11	PIN, CONNECTOR 12P		D303	8-719-000-12	DIODE MC921	
CN414	*1-564-006-11	PIN, CONNECTOR 7P		D304	8-719-911-19	DIODE 1SS119	
CN415	*1-564-005-00	PIN, CONNECTOR 6P		D401	8-719-911-19	DIODE 1SS119	
CN416	*1-560-891-00	PIN, CONNECTOR 3P		D402	8-719-100-35	ZENER DIODE RD5.6EB2	
CN417	*1-560-891-00	PIN, CONNECTOR 3P		D403	8-719-911-19	DIODE 1SS119	
CN418	*1-560-891-00	PIN, CONNECTOR 3P		D404	8-719-911-19	DIODE 1SS119	
CN419	*1-560-891-00	PIN, CONNECTOR 3P		D405	8-719-911-19	DIODE 1SS119	
CN420	*1-564-002-00	PIN, CONNECTOR 3P		D406	8-719-911-19	DIODE 1SS119	
CN422	1-564-003-00	PIN, CONNECTOR 4P		D407	8-719-911-19	DIODE 1SS119	
CN423	*1-564-003-00	PIN, CONNECTOR 4P		D408	8-719-911-19	DIODE 1SS119	
CN501	*1-560-466-00	PIN, CONNECTOR 3P		D409	8-719-000-12	DIODE MC921	
CN502	*1-564-003-00	PIN, CONNECTOR 4P		D410	8-719-911-19	DIODE 1SS119	
CN503	*1-560-891-00	PIN, CONNECTOR 3P		D411	8-719-911-19	DIODE 1SS119	
CN504	*1-564-003-00	PIN, CONNECTOR 4P		D412	8-719-000-04	DIODE MC911	
COMPOSITION CIRCUIT BLOCK				D413	8-719-000-12	DIODE MC921	
CP001	1-233-064-11	COMPOSITION CIRCUIT BLOCK		D416	8-719-911-19	DIODE 1SS119	
CP002	1-233-071-11	COMPOSITION CIRCUIT BLOCK		D501	8-719-911-19	DIODE 1SS119	
CP003	1-233-072-11	COMPOSITION CIRCUIT BLOCK		IC			
CP004	1-233-073-11	COMPOSITION CIRCUIT BLOCK		IC001	8-759-923-97	IC BA4561	
CP005	1-233-068-11	COMPOSITION CIRCUIT BLOCK		IC002	8-759-205-76	IC TC504013BP	
CP006	1-233-062-11	COMPOSITION CIRCUIT BLOCK		IC003	8-759-205-76	IC TC504013BP	
CP301	1-233-055-11	COMPOSITION CIRCUIT BLOCK		IC004	8-759-240-11	IC TC4011BP	
CP302	1-233-063-11	COMPOSITION CIRCUIT BLOCK		IC005	8-759-045-38	IC MC14538BCP	
CP404	1-233-069-11	COMPOSITION CIRCUIT BLOCK		IC006	8-751-941-03	IC CX-194B-3	
CP405	1-232-976-11	COMPOSITION CIRCUIT BLOCK		IC007	8-759-208-06	IC TC4051BP	
DIODE				IC008	8-759-040-53	IC MC14053BCP	
D001	8-719-911-19	DIODE 1SS119		IC009	8-741-109-00	IC BX-1090	
D002	8-719-000-12	DIODE MC921		IC010	8-759-135-80	IC UPC358C	
D003	8-719-000-04	DIODE MC911		IC011	8-759-135-80	IC UPC358C	
D004	8-719-911-19	DIODE 1SS119		IC012	8-759-240-81	IC TC4081BP	
D005	8-719-910-75	ZENER DIODE HZ7B2L		IC013	8-759-000-49	IC MC14066BCP	
D006	8-719-911-19	DIODE 1SS119		IC014	8-759-000-49	IC MC14066BCP	
D007	8-719-911-19	DIODE 1SS119		IC301	8-752-006-90	IC CX20069	
D008	8-719-911-19	DIODE 1SS119		IC302	8-759-000-49	IC MC14066BCP	
D009	8-719-920-05	LED SLP821C-50		IC401	8-752-803-59	IC CXP5048H-110Q	
D010	8-719-000-12	DIODE MC921		IC402	8-752-803-89	IC CXP5048H-117Q	
D011	8-719-000-12	DIODE MC931		IC403	8-759-800-72	IC LA7205	
D012	8-719-000-12	DIODE MC921		IC404	8-759-802-32	IC LB1649	
D013	8-719-000-12	DIODE MC921		IC405	8-759-729-03	IC NJM2903D	
D014	8-719-911-19	DIODE 1SS119		IC501	8-759-915-74	IC EWA129	
D015	8-719-911-19	DIODE 1SS119		IC502	8-743-983-00	IC BX-3983	
D017	8-719-911-19	DIODE 1SS119		COIL			
D018	8-719-000-12	DIODE MC931		L401	1-408-421-00	INDUCTOR 100UH	
D020	8-719-911-19	DIODE 1SS119		L402	1-408-421-00	INDUCTOR 100UH	
D022	8-719-911-19	DIODE 1SS119		L501	1-408-710-00	COIL, CHOKE 90UH	
D023	8-719-000-12	DIODE MC921		TRANSISTOR			
D025	8-719-000-12	DIODE MC921		Q002	8-729-900-89	TRANSISTOR DTC144ES	
D026	8-719-911-19	DIODE 1SS119					

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
Q003	8-729-900-89	TRANSISTOR DTC144ES		Q422	8-729-900-89	TRANSISTOR DTC144ES	
Q005	8-729-900-89	TRANSISTOR DTC144ES		Q427	8-729-900-89	TRANSISTOR DTC144ES	
Q011	8-729-900-89	TRANSISTOR DTC144ES		Q501	8-729-900-89	TRANSISTOR DTC144ES	
Q012	8-729-178-54	TRANSISTOR 2SC2785		Q502	8-729-177-32	TRANSISTOR 2SD773	
Q013	8-729-601-47	TRANSISTOR 2SK381-B		Q503	8-729-900-89	TRANSISTOR DTC144ES	
Q014	8-729-601-47	TRANSISTOR 2SK381-B		Q504	8-729-900-65	TRANSISTOR DTA144ES	
Q015	8-729-601-47	TRANSISTOR 2SK381-B		Q505	8-729-177-23	TRANSISTOR 2SB772	
Q016	8-729-117-54	TRANSISTOR 2SA1175		Q506	8-729-178-54	TRANSISTOR 2SC2785	
Q017	8-729-900-89	TRANSISTOR DTC144ES		Q507	8-729-177-32	TRANSISTOR 2SD773	
Q018	8-729-178-54	TRANSISTOR 2SC2785		Q508	8-729-107-26	TRANSISTOR 2SD1585	
Q019	8-729-178-54	TRANSISTOR 2SC2785		Q509	8-729-900-89	TRANSISTOR DTC144ES	
Q022	8-729-178-54	TRANSISTOR 2SC2785		Q512	8-729-177-32	TRANSISTOR 2SD773	
Q026	8-729-900-89	TRANSISTOR DTC144ES		Q647	8-729-900-89	TRANSISTOR DTC144ES	
Q027	8-729-900-65	TRANSISTOR DTA144ES					
Q028	8-729-900-89	TRANSISTOR DTC144ES				RESISTOR	
Q029	8-729-900-89	TRANSISTOR DTC144ES		R001	1-247-698-11	CARBON 68 5% 1/4W	
Q032	8-729-900-65	TRANSISTOR DTA144ES		R002	1-249-435-11	CARBON 33K 5% 1/4W	
Q035	8-729-900-89	TRANSISTOR DTC144ES		R003	1-249-435-11	CARBON 33K 5% 1/4W	
Q038	8-729-900-89	TRANSISTOR DTC144ES		R004	1-249-427-11	CARBON 6.8K 5% 1/4W	
Q039	8-729-900-89	TRANSISTOR DTC144ES		R007	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q040	8-729-900-89	TRANSISTOR DTC144ES		R008	1-249-420-11	CARBON 1.8K 5% 1/4W	
Q041	8-729-900-85	TRANSISTOR DTC144WS		R009	1-249-430-11	CARBON 12K 5% 1/4W	
Q042	8-729-900-89	TRANSISTOR DTC144ES		R010	1-249-429-11	CARBON 10K 5% 1/4W	
Q043	8-729-178-54	TRANSISTOR 2SC2785		R011	1-249-429-11	CARBON 10K 5% 1/4W	
Q044	8-729-117-54	TRANSISTOR 2SA1175		R012	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q045	8-729-900-89	TRANSISTOR DTC144ES		R015	1-247-891-00	CARBON 330K 5% 1/4W	
Q301	8-729-178-54	TRANSISTOR 2SC2785		R016	1-249-437-11	CARBON 47K 5% 1/4W	
Q302	8-729-900-89	TRANSISTOR DTC144ES		R017	1-247-895-00	CARBON 470K 5% 1/4W	
Q303	8-729-900-89	TRANSISTOR DTC144ES		R018	1-249-433-11	CARBON 22K 5% 1/4W	
Q304	8-729-900-89	TRANSISTOR DTC144ES		R019	1-249-433-11	CARBON 22K 5% 1/4W	
Q305	8-729-900-89	TRANSISTOR DTC144ES		R020	1-247-854-11	CARBON 9.1K 5% 1/4W	
Q306	8-729-900-89	TRANSISTOR DTC144ES		R021	1-249-432-11	CARBON 18K 5% 1/4W	
Q308	8-729-117-54	TRANSISTOR 2SA1175		R024	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q309	8-729-900-89	TRANSISTOR DTC144ES		R027	1-247-090-00	CARBON 20 5% 1/4W	
Q401	8-729-900-89	TRANSISTOR DTC144ES		R028	1-249-429-11	CARBON 10K 5% 1/4W	
Q402	8-729-900-65	TRANSISTOR DTA144ES		R029	1-249-429-11	CARBON 10K 5% 1/4W	
Q403	8-729-900-65	TRANSISTOR DTA144ES		R030	1-249-429-11	CARBON 10K 5% 1/4W	
Q404	8-729-116-42	TRANSISTOR 2SD1164		R031	1-249-427-11	CARBON 6.8K 5% 1/4W	
Q405	8-729-378-84	TRANSISTOR 2SD788		R032	1-247-883-00	CARBON 150K 5% 1/4W	
Q406	8-729-116-42	TRANSISTOR 2SD1164		R033	1-249-411-11	CARBON 330 5% 1/4W	
Q407	8-729-378-84	TRANSISTOR 2SD788		R034	1-249-428-11	CARBON 8.2K 5% 1/4W	
Q408	8-729-116-42	TRANSISTOR 2SD1164		R035	1-247-870-11	CARBON 43K 5% 1/4W	
Q409	8-729-116-42	TRANSISTOR 2SD1164		R036	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q410	8-729-900-61	TRANSISTOR DTA114ES		R037	1-249-436-11	CARBON 39K 5% 1/4W	
Q411	8-729-900-61	TRANSISTOR DTA114ES		R038	1-249-429-11	CARBON 10K 5% 1/4W	
Q412	8-729-900-61	TRANSISTOR DTA114ES		R039	1-249-421-11	CARBON 2.2K 5% 1/4W	
Q413	8-729-900-61	TRANSISTOR DTA114ES		R040	1-249-435-11	CARBON 33K 5% 1/4W	
Q416	8-729-900-89	TRANSISTOR DTC144ES		R041	1-247-895-00	CARBON 470K 5% 1/4W	
Q417	8-729-900-89	TRANSISTOR DTC144ES		R042	1-249-435-11	CARBON 33K 5% 1/4W	
Q418	8-729-900-89	TRANSISTOR DTC144ES		R043	1-249-427-11	CARBON 6.8K 5% 1/4W	
Q419	8-729-900-74	TRANSISTOR DTC143TS		R044	1-247-864-11	CARBON 24K 5% 1/4W	
Q420	8-729-178-54	TRANSISTOR 2SC2785		R045	1-249-434-11	CARBON 27K 5% 1/4W	
Q421	8-729-900-89	TRANSISTOR DTC144ES		R046	1-247-854-11	CARBON 9.1K 5% 1/4W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R047	1-249-418-11	CARBON	1.2K 5% 1/4W	R116	1-249-405-11	CARBON	100 5% 1/4W
R048	1-249-427-11	CARBON	6.8K 5% 1/4W	R117	1-249-428-11	CARBON	8.2K 5% 1/4W
R049	1-249-429-11	CARBON	10K 5% 1/4W	R118	1-249-421-11	CARBON	2.2K 5% 1/4W
R051	1-249-425-11	CARBON	4.7K 5% 1/4W	R301	1-249-431-11	CARBON	15K 5% 1/4W
R052	1-249-425-11	CARBON	4.7K 5% 1/4W	R302	1-249-429-11	CARBON	10K 5% 1/4W
R053	1-249-420-11	CARBON	1.8K 5% 1/4W	R303	1-249-441-11	CARBON	100K 5% 1/4W
R054	1-249-432-11	CARBON	18K 5% 1/4W	R304	1-249-437-11	CARBON	47K 5% 1/4W
R055	1-249-425-11	CARBON	4.7K 5% 1/4W	R305	1-249-439-11	CARBON	68K 5% 1/4W
R057	1-249-425-11	CARBON	4.7K 5% 1/4W	R306	1-247-883-00	CARBON	150K 5% 1/4W
R058	1-249-429-11	CARBON	10K 5% 1/4W	R307	1-249-429-11	CARBON	10K 5% 1/4W
R059	1-249-429-11	CARBON	10K 5% 1/4W	R308	1-249-437-11	CARBON	47K 5% 1/4W
R060	1-249-435-11	CARBON	33K 5% 1/4W	R309	1-249-434-11	CARBON	27K 5% 1/4W
R061	1-249-429-11	CARBON	10K 5% 1/4W	R310	1-247-903-00	CARBON	1M 5% 1/4W
R062	1-247-899-11	CARBON	680K 5% 1/4W	R311	1-249-421-11	CARBON	2.2K 5% 1/4W
R063	1-249-419-11	CARBON	1.5K 5% 1/4W	R312	1-249-422-11	CARBON	2.7K 5% 1/4W
R064	1-249-428-11	CARBON	8.2K 5% 1/4W	R313	1-247-891-00	CARBON	330K 5% 1/4W
R065	1-249-425-11	CARBON	4.7K 5% 1/4W	R314	1-249-431-11	CARBON	15K 5% 1/4W
R066	1-249-422-11	CARBON	2.7K 5% 1/4W	R315	1-249-427-11	CARBON	6.8K 5% 1/4W
R068	1-249-425-11	CARBON	4.7K 5% 1/4W	R317	1-247-866-11	CARBON	30K 5% 1/4W
R071	1-249-435-11	CARBON	33K 5% 1/4W	R318	1-247-866-11	CARBON	30K 5% 1/4W
R072	1-249-434-11	CARBON	27K 5% 1/4W	R319	1-249-431-11	CARBON	15K 5% 1/4W
R073	1-247-896-11	CARBON	510K 5% 1/4W	R320	1-249-437-11	CARBON	47K 5% 1/4W
R074	1-247-860-11	CARBON	16K 5% 1/4W	R321	1-247-893-11	CARBON	390K 5% 1/4W
R075	1-249-437-11	CARBON	47K 5% 1/4W	R322	1-249-428-11	CARBON	8.2K 5% 1/4W
R076	1-249-437-11	CARBON	47K 5% 1/4W	R323	1-249-425-11	CARBON	4.7K 5% 1/4W
R077	1-249-437-11	CARBON	47K 5% 1/4W	R324	1-249-437-11	CARBON	47K 5% 1/4W
R079	1-249-437-11	CARBON	47K 5% 1/4W	R325	1-249-429-11	CARBON	10K 5% 1/4W
R080	1-249-429-11	CARBON	10K 5% 1/4W	R401	1-249-417-11	CARBON	1K 5% 1/4W
R081	1-249-429-11	CARBON	10K 5% 1/4W	R402	1-249-417-11	CARBON	1K 5% 1/4W
R083	1-249-417-11	CARBON	1K 5% 1/4W	R403	1-249-425-11	CARBON	4.7K 5% 1/4W
R084	1-249-436-11	CARBON	39K 5% 1/4W	R404	1-249-429-11	CARBON	10K 5% 1/4W
R086	1-249-417-11	CARBON	1K 5% 1/4W	R405	1-249-429-11	CARBON	10K 5% 1/4W
R087	1-249-441-11	CARBON	100K 5% 1/4W	R406	1-249-425-11	CARBON	4.7K 5% 1/4W
R088	1-249-432-11	CARBON	18K 5% 1/4W	R407	1-249-417-11	CARBON	1K 5% 1/4W
R089	1-249-434-11	CARBON	27K 5% 1/4W	R408	1-215-905-11	METAL OXIDE	10 5% 3W F
R090	1-247-895-00	CARBON	470K 5% 1/4W	R409	1-249-417-11	CARBON	1K 5% 1/4W
R092	1-249-431-11	CARBON	15K 5% 1/4W	R410	1-249-417-11	CARBON	1K 5% 1/4W
R093	1-249-428-11	CARBON	8.2K 5% 1/4W	R411	1-249-417-11	CARBON	1K 5% 1/4W
R095	1-249-418-11	CARBON	1.2K 5% 1/4W	R412	1-249-417-11	CARBON	1K 5% 1/4W
R096	1-249-423-11	CARBON	3.3K 5% 1/4W	R413	1-249-425-11	CARBON	4.7K 5% 1/4W
R098	1-247-893-11	CARBON	390K 5% 1/4W	R414	1-249-429-11	CARBON	10K 5% 1/4W
R099	1-249-429-11	CARBON	10K 5% 1/4W	R415	1-249-429-11	CARBON	10K 5% 1/4W
R100	1-215-433-00	METAL	3.3K 1% 1/6W	R416	1-249-429-11	CARBON	10K 5% 1/4W
R101	1-215-429-00	METAL	2.2K 1% 1/6W	R417	1-249-429-11	CARBON	10K 5% 1/4W
R102	1-249-435-11	CARBON	33K 5% 1/4W	R418	1-249-429-11	CARBON	10K 5% 1/4W
R103	1-249-441-11	CARBON	100K 5% 1/4W	R419	1-249-429-11	CARBON	10K 5% 1/4W
R104	1-215-436-00	METAL	4.3K 1% 1/6W	R423	1-249-438-11	CARBON	56K 5% 1/4W
R110	1-249-427-11	CARBON	6.8K 5% 1/4W	R424	1-249-433-11	CARBON	22K 5% 1/4W
R111	1-249-414-11	CARBON	560 5% 1/4W	R425	1-249-432-11	CARBON	18K 5% 1/4W
R112	1-249-441-11	CARBON	100K 5% 1/4W	R426	1-249-429-11	CARBON	10K 5% 1/4W
R113	1-215-438-00	METAL	5.1K 1% 1/6W	R427	1-249-429-11	CARBON	10K 5% 1/4W
R114	1-215-439-00	METAL	5.6K 1% 1/6W	R428	1-249-429-11	CARBON	10K 5% 1/4W
R115	1-249-432-11	CARBON	18K 5% 1/4W	R429	1-249-417-11	CARBON	1K 5% 1/4W

When indicating parts by reference number, please include the board name.

Note:
The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque  sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.	Note: Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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—257—

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>TRANSISTOR</u>				<u>RESISTOR</u>			
Q901	8-729-117-54	TRANSISTOR 2SA1175		R440	1-249-417-11	CARBON 1K 5% 1/4W	
Q902	8-729-802-87	TRANSISTOR 2SB892		R441	1-249-441-11	CARBON 100K 5% 1/4W	
Q903	8-729-117-54	TRANSISTOR 2SA1175		R442	1-249-437-11	CARBON 47K 5% 1/4W	
Q904	8-729-802-87	TRANSISTOR 2SB892		*****			
Q905	8-729-900-53	TRANSISTOR DTC144EK		*A-6729-685-A HJ-5(B) BOARD, COMPLETE			

Q906	8-729-901-04	TRANSISTOR DTA114EK		<u>TRANSISTOR</u>			
Q907	8-729-100-66	TRANSISTOR 2SC1623		Q046	8-729-178-54	TRANSISTOR 2SC2785	
Q908	8-729-100-66	TRANSISTOR 2SC1623		Q047	8-729-900-89	TRANSISTOR DTC144ES	
Q909	8-729-900-53	TRANSISTOR DTC144EK		Q048	8-729-178-54	TRANSISTOR 2SC2785	
Q910	8-729-900-53	TRANSISTOR DTC144EK		Q049	8-729-900-90	TRANSISTOR DTC144ES	
Q911	8-729-900-53	TRANSISTOR DTC144EK		<u>RESISTOR</u>			
Q912	8-729-900-53	TRANSISTOR DTC144EK		R002	1-249-435-11	CARBON 33K 5% 1/4W	
Q913	8-729-900-53	TRANSISTOR DTC144EK		R003	1-249-435-11	CARBON 33K 5% 1/4W	
<u>RESISTOR</u>				R004	1-249-421-11	CARBON 2.2K 5% 1/4W	
R901	1-249-396-11	CARBON 18 5% 1/4W		R070	1-249-429-11	CARBON 10K 5% 1/4W	
R902	1-249-405-11	CARBON 100 5% 1/4W		R071	1-249-435-11	CARBON 33K 5% 1/4W	
R903	1-216-031-00	METAL GLAZE 180 5% 1/10W		*****			
R904	1-216-038-00	METAL GLAZE 360 5% 1/10W		*A-6729-690-A RT-12 BOARD, COMPLETE			
R905	1-216-083-00	METAL GLAZE 27K 5% 1/10W		*****			
R906	1-216-085-00	METAL GLAZE 33K 5% 1/10W		<u>CAPACITOR</u>			
R907	1-216-085-00	METAL GLAZE 33K 5% 1/10W		C409	1-161-379-00	CERAMIC 0.01MF 30% 16V	
R908	1-249-396-11	CARBON 18 5% 1/4W		<u>DIODE</u>			
R909	1-249-405-11	CARBON 100 5% 1/4W		D001	8-719-911-19	DIODE 1SS119	
R910	1-216-031-00	METAL GLAZE 180 5% 1/10W		D002	8-719-000-12	DIODE MC921	
R911	1-216-038-00	METAL GLAZE 360 5% 1/10W		D003	8-719-000-12	DIODE MC921	
R912	1-216-085-00	METAL GLAZE 33K 5% 1/10W		<u>TRANSISTOR</u>			
R913	1-216-083-00	METAL GLAZE 27K 5% 1/10W		Q001	8-729-900-89	TRANSISTOR DTC144ES	
R914	1-216-085-00	METAL GLAZE 33K 5% 1/10W		Q002	8-729-900-89	TRANSISTOR DTC144ES	
R915	1-216-089-00	METAL GLAZE 47K 5% 1/10W		Q003	8-729-900-89	TRANSISTOR DTC144ES	
R916	1-216-089-00	METAL GLAZE 47K 5% 1/10W		<u>RESISTOR</u>			
R917	1-216-035-00	METAL GLAZE 270 5% 1/10W		R001	1-249-429-11	CARBON 10K 5% 1/4W	
R918	1-216-035-00	METAL GLAZE 270 5% 1/10W		R002	1-249-412-11	CARBON 390 5% 1/4W	
R920	1-216-089-00	METAL GLAZE 47K 5% 1/10W		*****			
*****				*A-6721-289-A TU-86 BOARD, COMPLETE			
*A-6729-683-A SR-4 BOARD, COMPLETE				*****			
*****				(Including the TU-87, TU-88 and UE-1 BOARD)			
<u>CAPACITOR</u>				*1-556-945-21 CABLE, PIN			
C430	1-124-247-00	ELECT 10MF 20% 25V		*3-682-419-01 HOLDER, P.C.B			
<u>DIODE</u>				3-720-263-11 PANEL (UPPER), OANAMENTAL, REAR			
D414	8-719-100-30	ZENER DIODE RD5.1EB2		3-721-381-01 PLATE, GROUND, MOD			
D415	8-719-911-19	DIODE 1SS119					
D417	8-719-911-19	DIODE 1SS119					
D418	8-719-911-19	DIODE 1SS119					
<u>TRANSISTOR</u>							
Q425	8-729-900-74	TRANSISTOR DTC143TS					
Q426	8-729-900-89	TRANSISTOR DTC144ES					

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
	3-721-395-01	HOLDER, TUNER		C915	1-102-963-00	CERAMIC 33PF 5% 50V	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3		C916	1-102-114-00	CERAMIC 470PF 10% 50V	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2		C917	1-124-902-00	ELECT 0.47MF 20% 50V	
<u>MODULATOR</u>				C918	1-130-477-00	MYLAR 0.0033MF 5% 50V	
ANT901A	1-464-799-21	MODULATOR, RF (RFU-793)		C919	1-124-902-00	ELECT 0.47MF 20% 50V	
<u>CAPACITOR</u>				C920	1-102-816-00	CERAMIC 120PF 5% 50V	
C001	1-102-963-00	CERAMIC 33PF 5% 50V		C921	1-161-021-11	CERAMIC 0.047MF 10% 25V	
C002	1-102-963-00	CERAMIC 33PF 5% 50V		C922	1-161-051-00	CERAMIC 0.01MF 10% 50V	
C003	1-161-021-11	CERAMIC 0.047MF 10% 25V		C923	1-124-908-11	ELECT 22MF 20% 50V	
C004	1-123-875-11	ELECT 10MF 20% 50V		C925	1-102-960-00	CERAMIC 24PF 5% 50V	
C005	1-161-772-11	CERAMIC 0.1MF 10% 25V		C926	1-102-950-00	CERAMIC 13PF 5% 50V	
C012	1-124-925-11	ELECT 2.2MF 20% 50V		C927	1-102-953-00	CERAMIC 18PF 5% 50V	
C013	1-102-959-00	CERAMIC 22PF 5% 50V		C928	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C014	1-124-446-11	ELECT 47MF 20% 10V		C929	1-124-443-00	ELECT 100MF 20% 10V	
C015	1-102-959-00	CERAMIC 22PF 5% 50V		C934	1-124-925-11	ELECT 2.2MF 20% 50V	
C016	1-161-021-11	CERAMIC 0.047MF 10% 25V		C935	1-161-021-11	CERAMIC 0.047MF 10% 25V	
C021	1-124-638-11	ELECT 22MF 20% 10V		<u>CONNECTOR</u>			
C101	1-124-477-11	ELECT 47MF 20% 16V		CN001	*1-560-892-00	PIN, CONNECTOR 4P	
C102	1-123-875-11	ELECT 10MF 20% 50V		CN002	*1-560-896-00	PIN, CONNECTOR 8P	
C103	1-123-875-11	ELECT 10MF 20% 50V		CN004	*1-564-004-00	PIN, CONNECTOR 5P	
C104	1-123-875-11	ELECT 10MF 20% 50V		CN005	*1-560-894-00	PIN, CONNECTOR 6P	
C105	1-123-875-11	ELECT 10MF 20% 50V		CN006	*1-564-009-00	PIN, CONNECTOR 10P	
C106	1-123-875-11	ELECT 10MF 20% 50V		CN008	*1-564-008-00	PIN, CONNECTOR 9P	
C107	1-123-875-11	ELECT 10MF 20% 50V		CN011	*1-560-891-00	PIN, CONNECTOR 3P	
C112	1-102-121-00	CERAMIC 0.0022MF 10% 50V		CN012	*1-560-891-00	PIN, CONNECTOR 3P	
C114	1-123-875-11	ELECT 10MF 20% 50V		CN013	*1-563-310-11	CONNECTOR, BOARD TO BOARD 8P	
C501	1-102-961-00	CERAMIC 27PF 5% 50V		<u>JACK</u>			
C502	1-102-961-00	CERAMIC 27PF 5% 50V		CNJ001	1-507-678-00	JACK (CONTROL S IN)	
C503	1-161-021-11	CERAMIC 0.047MF 10% 25V		CNJ002	1-507-678-00	JACK (CONTROL S OUT)	
C504	1-123-875-11	ELECT 10MF 20% 50V		CNJ003	1-507-833-31	JACK (CONTROL T)	
C505	1-161-024-00	CERAMIC 0.082MF 10% 25V		CNJ004	1-562-732-11	SOCKET 5P (CONTROL L)	
C506	1-102-958-00	CERAMIC 20PF 5% 50V		<u>DIODE</u>			
C507	1-102-958-00	CERAMIC 20PF 5% 50V		D007	8-719-200-02	DIODE 10E-2	
C508	1-124-236-00	ELECT 47MF 20% 10V		D008	8-719-911-19	DIODE 1SS119	
C509	1-161-021-11	CERAMIC 0.047MF 10% 25V		D009	8-719-911-19	DIODE 1SS119	
C510	1-124-236-00	ELECT 47MF 20% 16V		D010	8-719-911-19	DIODE 1SS119	
C511	1-161-021-11	CERAMIC 0.047MF 10% 25V		D011	8-719-911-19	DIODE 1SS119	
C551	1-102-978-00	CERAMIC 220PF 5% 50V		D012	8-719-911-19	DIODE 1SS119	
C552	1-130-485-00	MYLAR 0.015MF 5% 50V		D013	8-719-911-19	DIODE 1SS119	
C553	1-102-973-00	CERAMIC 100PF 5% 50V		D014	8-719-911-19	DIODE 1SS119	
C900	1-124-908-11	ELECT 22MF 20% 25V		D015	8-719-911-19	DIODE 1SS119	
C901	1-124-477-11	ELECT 47MF 20% 16V		D016	8-719-911-19	DIODE 1SS119	
C902	1-161-021-11	CERAMIC 0.047MF 10% 25V		D102	8-719-911-19	DIODE 1SS119	
C903	1-124-477-11	ELECT 47MF 20% 16V		D502	8-719-109-97	ZENER DIODE RD6.8EB2	
C905	1-124-472-11	ELECT 470MF 20% 10V		D503	8-719-109-97	ZENER DIODE RD6.8EB2	
C906	1-124-443-00	ELECT 100MF 20% 10V		D504	8-719-109-97	ZENER DIODE RD6.8EB2	
C907	1-124-927-11	ELECT 4.7MF 20% 50V		D506	8-719-109-97	ZENER DIODE RD6.8EB2	
C911	1-124-477-11	ELECT 47MF 20% 16V		D507	8-719-100-68	ZENER DIODE RD13EB2	
C912	1-124-477-11	ELECT 47MF 20% 16V		D508	8-719-109-97	ZENER DIODE RD6.8EB2	
C913	1-102-966-00	CERAMIC 43PF 5% 50V		D509	8-719-109-93	ZENER DIODE RD6.2ES-B2	
C914	1-124-443-00	ELECT 100MF 20% 10V					

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
D510	8-719-109-93	ZENER DIODE RD6.2ES-B2		Q018	8-729-900-89	TRANSISTOR DTC144ES	
D511	8-719-109-93	ZENER DIODE RD6.2ES-B2		Q019	8-729-900-36	TRANSISTOR DTC124ES	
D512	8-719-100-35	ZENER DIODE RD5.6EB2		Q020	8-729-900-61	TRANSISTOR DTA114ES	
D903	8-719-101-04	ZENER DIODE RD33EB2		Q021	8-729-178-54	TRANSISTOR 2SC2785	
D904	8-719-109-89	ZENER DIODE RD5.6ESB2		Q022	8-729-107-26	TRANSISTOR 2SD1585	
FERRITE				Q101	8-729-900-65	TRANSISTOR DTA144ES	
FB001	1-410-397-21	FERRITE BEAD INDUCTOR		Q102	8-729-900-89	TRANSISTOR DTC144ES	
FB002	1-410-397-21	FERRITE BEAD INDUCTOR		Q103	8-729-900-89	TRANSISTOR DTC144ES	
FB003	1-410-397-21	FERRITE BEAD INDUCTOR		Q104	8-729-900-80	TRANSISTOR DTC114ES	
FB004	1-410-397-21	FERRITE BEAD INDUCTOR		Q501	8-729-900-89	TRANSISTOR DTC144ES	
FB005	1-410-397-21	FERRITE BEAD INDUCTOR		Q901	8-729-178-54	TRANSISTOR 2SC2785	
IC				Q902	8-729-178-54	TRANSISTOR 2SC2785	
IC001	8-759-920-94	IC MSM6411B-19RS		Q903	8-729-117-54	TRANSISTOR 2SA1175	
IC002	8-759-108-92	IC UPD7507HCU-203		Q904	8-729-117-54	TRANSISTOR 2SA1175	
IC102	8-759-602-48	IC M5201L		Q906	8-729-177-43	TRANSISTOR 2SD774	
IC501	8-752-803-37	IC CXP5046H-102Q		Q907	8-729-178-54	TRANSISTOR 2SC2785	
IC502	8-759-030-47	IC MC68HC05N2B-SLX1211		Q908	8-729-178-54	TRANSISTOR 2SC2785	
IC551	8-759-202-86	IC TC74HC123P		Q909	8-729-177-32	TRANSISTOR 2SD773	
IC552	8-741-143-64	IC SBX1436-11		Q910	8-729-117-54	TRANSISTOR 2SA1175	
COIL				Q911	8-729-178-54	TRANSISTOR 2SC2785	
L101	1-408-409-00	INDUCTOR 10UH		Q912	8-729-900-36	TRANSISTOR DTC124ES	
L901	1-408-409-00	INDUCTOR 10UH		RESISTOR			
L902	1-408-409-00	INDUCTOR 10UH		R001	1-249-429-11	CARBON 10K 5% 1/4W	
L903	1-408-409-00	INDUCTOR 10UH		R002	1-249-433-11	CARBON 22K 5% 1/4W	
L904	1-408-413-00	INDUCTOR 22UH		R003	1-249-433-11	CARBON 22K 5% 1/4W	
L905	1-407-879-00	COIL, CHOKE 33MMH		R004	1-249-441-11	CARBON 100K 5% 1/4W	
L907	1-408-416-00	INDUCTOR 39UH		R005	1-249-405-11	CARBON 100 5% 1/4W	
L909	1-408-413-00	INDUCTOR 22UH		R006	1-249-423-11	CARBON 3.3K 5% 1/4W	
COATING PIN				R007	1-249-417-11	CARBON 1K 5% 1/4W	
LP001	*3-695-075-01	PIN, LEAD, COATING		R008	1-249-423-11	CARBON 3.3K 5% 1/4W	
TRANSISTOR				R009	1-249-437-11	CARBON 47K 5% 1/4W	
Q001	8-729-178-54	TRANSISTOR 2SC2785		R010	1-249-441-11	CARBON 100K 5% 1/4W	
Q002	8-729-900-85	TRANSISTOR DTC144WS		R011	1-249-405-11	CARBON 100 5% 1/4W	
Q003	8-729-900-89	TRANSISTOR DTC144ES		R012	1-249-421-11	CARBON 2.2K 5% 1/4W	
Q004	8-729-900-89	TRANSISTOR DTC144ES		R013	1-249-433-11	CARBON 22K 5% 1/4W	
Q005	8-729-117-54	TRANSISTOR 2SA1175		R014	1-249-433-11	CARBON 22K 5% 1/4W	
Q006	8-729-178-54	TRANSISTOR 2SC2785		R015	1-249-433-11	CARBON 22K 5% 1/4W	
Q007	8-729-900-89	TRANSISTOR DTC144ES		R016	1-249-429-11	CARBON 10K 5% 1/4W	
Q008	8-729-178-54	TRANSISTOR 2SC2785		R017	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q009	8-729-900-89	TRANSISTOR DTC144ES		R018	1-249-433-11	CARBON 22K 5% 1/4W	
Q010	8-729-178-54	TRANSISTOR 2SC2785		R019	1-249-433-11	CARBON 22K 5% 1/4W	
Q011	8-729-900-89	TRANSISTOR DTC144ES		R021	1-249-437-11	CARBON 47K 5% 1/4W	
Q012	8-729-900-65	TRANSISTOR DTA144ES		R022	1-249-429-11	CARBON 10K 5% 1/4W	
Q013	8-729-900-89	TRANSISTOR DTC144ES		R023	1-249-423-11	CARBON 3.3K 5% 1/4W	
Q014	8-729-900-89	TRANSISTOR DTC144ES		R024	1-249-454-11	CARBON 3.9 5% 1/4W F	
Q015	8-729-900-89	TRANSISTOR DTC144ES		R025	1-249-409-11	CARBON 220 5% 1/4W F	
Q016	8-729-900-89	TRANSISTOR DTC144ES		R026	1-249-405-11	CARBON 100 5% 1/4W	
Q017	8-729-900-89	TRANSISTOR DTC144ES		R100	1-247-887-00	CARBON 220K 5% 1/4W	
				R101	1-249-417-11	CARBON 1K 5% 1/4W	
				R102	1-249-433-11	CARBON 22K 5% 1/4W	
				R103	1-249-433-11	CARBON 22K 5% 1/4W	
				R104	1-249-433-11	CARBON 22K 5% 1/4W	

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Note:
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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R105	1-249-433-11	CARBON	22K 5% 1/4W	R928	1-249-429-11	CARBON	10K 5% 1/4W
R106	1-249-421-11	CARBON	2.2K 5% 1/4W	R929	1-249-429-11	CARBON	10K 5% 1/4W
R107	1-249-421-11	CARBON	2.2K 5% 1/4W	R930	1-249-436-11	CARBON	39K 5% 1/4W
R108	1-249-428-11	CARBON	8.2K 5% 1/4W	R931	1-249-426-11	CARBON	5.6K 5% 1/4W
R109	1-249-421-11	CARBON	2.2K 5% 1/4W	VARIABLE RESISTOR			
R110	1-249-420-11	CARBON	1.8K 5% 1/4W	RV103	1-228-994-00	RES, ADJ, CARBON 10K	
R112	1-249-437-11	CARBON	47K 5% 1/4W	RV501	1-230-694-11	RES, VAR, CARBON 250K	
R114	1-249-429-11	CARBON	10K 5% 1/4W	SWITCH			
R115	1-249-429-11	CARBON	10K 5% 1/4W	S502	1-553-856-00	SWITCH, KEY BOARD (ADD)	
R116	1-249-431-11	CARBON	15K 5% 1/4W	S503	1-553-856-00	SWITCH, KEY BOARD (ERASE)	
R117	1-249-431-11	CARBON	15K 5% 1/4W	S504	1-570-865-11	SWITCH, SLIDE (AUTO STEREO)	
R502	1-249-437-11	CARBON	47K 5% 1/4W	S508	1-570-865-11	SWITCH, SLIDE (RF UNIT)	
R503	1-249-437-11	CARBON	47K 5% 1/4W	S510	1-553-856-00	SWITCH, KEY BOARD (CATV/NORM)	
R504	1-249-437-11	CARBON	47K 5% 1/4W	CRYSTAL			
R505	1-249-437-11	CARBON	47K 5% 1/4W	X001	1-567-192-11	OSCILLATOR, CERAMIC 4MHz	
R506	1-249-437-11	CARBON	47K 5% 1/4W	X002	1-567-160-21	OSCILLATOR, CERAMIC 4.19MHz	
R507	1-249-437-11	CARBON	47K 5% 1/4W	X501	1-567-160-21	OSCILLATOR, CERAMIC 4.19MHz	
R508	1-249-437-11	CARBON	47K 5% 1/4W	X502	1-567-160-21	OSCILLATOR, CERAMIC 4.19MHz	
R509	1-249-437-11	CARBON	47K 5% 1/4W	*****			
R510	1-247-903-00	CARBON	1M 5% 1/4W	*A-6729-652-A UE-1 BOARD, COMPLETE			
R511	1-249-429-11	CARBON	10K 5% 1/4W	*****			
R513	1-249-429-11	CARBON	10K 5% 1/4W	CAPACITOR			
R514	1-249-429-11	CARBON	10K 5% 1/4W	C001	1-102-121-00	CERAMIC	0.0022MF 10% 50V
R515	1-249-437-11	CARBON	47K 5% 1/4W	C002	1-102-074-00	CERAMIC	0.001MF 10% 50V
R518	1-249-429-11	CARBON	10K 5% 1/4W	C003	1-123-611-00	ELECT	1MF 20% 50V
R519	1-249-429-11	CARBON	10K 5% 1/4W	C004	1-102-074-00	CERAMIC	0.001MF 10% 50V
R551	1-249-429-11	CARBON	10K 5% 1/4W	C005	1-161-051-00	CERAMIC	0.01MF 10% 25V
R552	1-249-426-11	CARBON	5.6K 5% 1/4W	C006	1-161-057-00	CERAMIC	0.033MF 10% 25V
R553	1-249-435-11	CARBON	33K 5% 1/4W	C007	1-161-057-00	CERAMIC	0.033MF 10% 25V
R554	1-249-437-11	CARBON	47K 5% 1/4W	C008	1-123-611-00	ELECT	1MF 20% 50V
R902	1-212-849-00	FUSIBLE	4.7 5% 1/4W F	C010	1-124-462-00	ELECT	10MF 20% 16V
R903	1-249-416-11	CARBON	820 5% 1/4W	C011	1-161-055-00	CERAMIC	0.022MF 10% 25V
R904	1-249-425-11	CARBON	4.7K 5% 1/4W	C012	1-124-462-00	ELECT	10MF 20% 16V
R906	1-249-421-11	CARBON	2.2K 5% 1/4W	C013	1-161-055-00	CERAMIC	0.022MF 10% 25V
R907	1-249-405-11	CARBON	100 5% 1/4W	CONNECTOR			
R908	1-249-405-11	CARBON	100 5% 1/4W	CN001	*1-564-028-00	PIN, CONNECTOR 3P	
R910	1-249-413-11	CARBON	470 5% 1/4W	CN002	*1-564-014-00	PIN, CONNECTOR 4P	
R911	1-247-891-00	CARBON	330K 5% 1/4W	CN003	*1-564-017-00	PIN, CONNECTOR 7P	
R912	1-247-903-00	CARBON	1M 5% 1/4W	CN004	*1-566-123-11	CONNECTOR, BOARD TO BOARD 8P	
R913	1-249-393-11	CARBON	10 5% 1/4W	IC			
R914	1-249-426-11	CARBON	5.6K 5% 1/4W	IC001	8-759-132-40	IC UPC324C	
R915	1-249-421-11	CARBON	2.2K 5% 1/4W	TRANSISTOR			
R917	1-249-417-11	CARBON	1K 5% 1/4W	Q001	8-729-178-54	TRANSISTOR 2SC2785	
R918	1-249-417-11	CARBON	1K 5% 1/4W	Q002	8-729-117-54	TRANSISTOR 2SA1175	
R919	1-215-407-00	METAL	270 1% 1/6W	Q003	8-729-178-54	TRANSISTOR 2SC2785	
R920	1-249-417-11	CARBON	1K 5% 1/4W				
R921	1-249-417-11	CARBON	1K 5% 1/4W				
R922	1-249-417-11	CARBON	1K 5% 1/4W				
R923	1-249-417-11	CARBON	1K 5% 1/4W				
R924	1-249-431-11	CARBON	15K 5% 1/4W				
R925	1-249-426-11	CARBON	5.6K 5% 1/4W				
R926	1-249-405-11	CARBON	100 5% 1/4W				
R927	1-249-421-11	CARBON	2.2K 5% 1/4W				

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Note:

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Note:

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
Q004	8-729-900-89	TRANSISTOR DTC144ES		1-624-066-21	TU-87 BOARD		
Q005	8-729-900-89	TRANSISTOR DTC144ES		*****			
Q006	8-729-303-37	TRANSISTOR 2SD655-E					
Q007	8-729-900-89	TRANSISTOR DTC144ES		IF			
Q008	8-729-900-89	TRANSISTOR DTC144ES		IF901A, 1-464-817-21	IF BLOCK (IFT-450)		
Q009	8-729-900-89	TRANSISTOR DTC144ES		*****			
Q010	8-729-900-89	TRANSISTOR DTC144ES		1-624-067-21	TU-88 BOARD		
Q011	8-729-900-89	TRANSISTOR DTC144ES		*****			
		RESISTOR					
R001	1-249-435-11	CARBON 33K 5% 1/4W		TUNER			
R002	1-249-429-11	CARBON 10K 5% 1/4W		TU901A, 1-463-771-11	TUNER, ET (BTP-201A)		
R003	1-249-412-11	CARBON 390 5% 1/4W		*****			
R004	1-249-397-11	CARBON 22 5% 1/4W		*1-624-070-11	PS-165 BOARD		
R005	1-249-409-11	CARBON 220 5% 1/4W		*****			
R006	1-249-428-11	CARBON 8.2K 5% 1/4W		1-533-162-00	HOLDER, FUSE		
R007	1-249-434-11	CARBON 27K 5% 1/4W					
R008	1-249-423-11	CARBON 3.3K 5% 1/4W		CAPACITOR			
R009	1-249-435-11	CARBON 33K 5% 1/4W		C004	1-124-918-11	ELECT 47MF 20% 63V	
R010	1-249-434-11	CARBON 27K 5% 1/4W		C005	1-124-919-11	ELECT 220MF 20% 63V	
R011	1-249-437-11	CARBON 47K 5% 1/4W		C006	1-124-908-11	ELECT 22MF 20% 25V	
R012	1-249-424-11	CARBON 3.9K 5% 1/4W		C007	1-124-908-11	ELECT 22MF 20% 50V	
R013	1-247-903-00	CARBON 1M 5% 1/4W		C008	1-124-908-11	ELECT 22MF 20% 25V	
R014	1-249-431-11	CARBON 15K 5% 1/4W		C009	1-124-908-11	ELECT 22MF 20% 50V	
R015	1-249-441-11	CARBON 100K 5% 1/4W		C010	1-161-379-00	CERAMIC 0.01MF 20% 16V	
R016	1-249-441-11	CARBON 100K 5% 1/4W		C023	1-161-379-00	CERAMIC 0.01MF 20% 16V	
R017	1-249-425-11	CARBON 4.7K 5% 1/4W		C024	1-161-379-00	CERAMIC 0.01MF 20% 16V	
R018	1-249-431-11	CARBON 15K 5% 1/4W		C025	1-161-379-00	CERAMIC 0.01MF 20% 16V	
R019	1-249-429-11	CARBON 10K 5% 1/4W		C026	1-161-379-00	CERAMIC 0.01MF 20% 16V	
R020	1-249-427-11	CARBON 6.8K 5% 1/4W		C030	1-161-772-11	CERAMIC 0.1MF 10% 25V	
R021	1-249-437-11	CARBON 47K 5% 1/4W		C031	1-161-772-11	CERAMIC 0.1MF 10% 25V	
R022	1-249-429-11	CARBON 10K 5% 1/4W		C033	1-126-101-11	ELECT 100MF 20% 16V	
R023	1-249-433-11	CARBON 22K 5% 1/4W		C034	1-161-379-00	CERAMIC 0.01MF 20% 16V	
R024	1-249-437-11	CARBON 47K 5% 1/4W					
R025	1-249-441-11	CARBON 100K 5% 1/4W		CONNECTOR			
R026	1-249-429-11	CARBON 10K 5% 1/4W		CN001	*1-560-897-00	PIN, CONNECTOR 9P	
R027	1-249-430-11	CARBON 12K 5% 1/4W		CN002	*1-560-895-00	PIN, CONNECTOR 7P	
R028	1-249-441-11	CARBON 100K 5% 1/4W		CN003	*1-560-892-00	PIN, CONNECTOR 4P	
R029	1-249-433-11	CARBON 22K 5% 1/4W		CN004	*1-560-894-00	PIN, CONNECTOR 6P	
R030	1-249-433-11	CARBON 22K 5% 1/4W		CN005	*1-560-894-00	PIN, CONNECTOR 6P	
R031	1-249-425-11	CARBON 4.7K 5% 1/4W		CN006	*1-560-892-00	PIN, CONNECTOR 4P	
R032	1-249-425-11	CARBON 4.7K 5% 1/4W		CN013	*1-560-891-00	PIN, CONNECTOR 3P	
R033	1-249-433-11	CARBON 22K 5% 1/4W		CN014	*1-560-893-00	PIN, CONNECTOR 5P	
R034	1-249-438-11	CARBON 56K 5% 1/4W		CN015	*1-560-892-00	PIN, CONNECTOR 4P	
		VARIABLE RESISTOR		CN016	*1-560-891-00	PIN, CONNECTOR 3P	
RV002	1-228-994-00	RES, ADJ, METAL GLAZE 10K		DIODE			
RV003	1-228-994-00	RES, ADJ, METAL GLAZE 10K		D004	8-719-200-23	DIODE 11E2	
*****				D005	8-719-200-23	DIODE 11E2	
				D006	8-719-100-68	ZENER DIODE RD13EB2	
				D007	8-719-100-98	ZENER DIODE RD30EB2	

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Ref.No	Part No.	Description	Remark
D008	8-719-109-80	ZENER DIODE RD4.7EB	
D022	8-719-911-19	DIODE 1SS119	

FUSE

F005	1-532-783-21	FUSE, MICRO (SECONDARY) 5A
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TRANSISTOR

Q001	8-729-103-43	TRANSISTOR 2SB734
Q002	8-729-103-43	TRANSISTOR 2SB734

RESISTOR

R001	1-212-857-00	FUSIBLE	10	5%	1/4W	F
R002	1-247-744-11	CARBON	270	5%	1/2W	F
R003	1-249-428-11	CARBON	8.2K	5%	1/4W	
R004	1-249-418-11	CARBON	1.2K	5%	1/4W	
R005	1-212-881-11	FUSIBLE	100	5%	1/4W	F
R006	1-249-429-11	CARBON	10K	5%	1/4W	
R015	1-247-747-11	CARBON	470	5%	1/2W	

*1-624-071-11	PS-166 BOARD

1-533-162-00	HOLDER, FUSE
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CAPACITOR

C003	1-126-107-11	ELECT	10000MF	20%	16V
C012	1-124-772-11	ELECT	10000MF	20%	25V
C013	1-124-772-11	ELECT	10000MF	20%	25V
C015	1-124-908-11	ELECT	22MF	20%	25V
C018	1-124-477-11	ELECT	47MF	20%	25V
C019	1-124-360-00	ELECT	1000MF	20%	16V
C021	1-124-477-11	ELECT	47MF	20%	25V
C022	1-126-101-11	ELECT	100MF	20%	16V
C027	1-124-360-00	ELECT	1000MF	20%	16V
C028	1-124-499-11	ELECT	1MF	20%	50V
C029	1-126-017-11	ELECT	6800MF	20%	16V
C032	1-161-772-11	CERAMIC	0.1MF	10%	25V

CONNECTOR

CN017	*1-560-893-00	PIN, CONNECTOR 5P
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DIODE

D001	8-719-309-99	DIODE RBV-406B
D017	8-719-911-19	DIODE 1SS119
D018	8-719-100-48	ZENER DIODE RD8.2EB2
D019	8-719-300-92	DIODE EK04
D021	8-719-300-92	DIODE EK04
D022	8-719-101-94	ZENER DIODE RD18EL1

Ref.No	Part No.	Description	Remark
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IC

IC005	8-749-920-06	IC STK5478S
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TRANSISTOR

Q006	8-729-900-80	TRANSISTOR DTC114ES
Q007	8-729-900-80	TRANSISTOR DTC114ES
Q008	8-729-288-02	TRANSISTOR 2SD880
Q009	8-729-900-80	TRANSISTOR DTC114ES

RESISTOR

R012	1-216-435-11	METAL OXIDE	2.7K	5%	1W	F
R013	1-249-423-11	CARBON	3.3K	5%	1/4W	
R014	1-249-418-11	CARBON	1.2K	5%	1/4W	
R020	1-249-429-11	CARBON	10K	5%	1/4W	
R021	1-249-421-11	CARBON	2.2K	5%	1/4W	
R022	1-249-420-11	CARBON	1.8K	5%	1/4W	
R023	1-249-425-11	CARBON	4.7K	5%	1/4W	

*1-624-072-11	PS-176 BOARD

CONNECTOR

CN018	*1-560-895-00	PIN, CONNECTOR 7P
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DIODE

D003	8-719-309-99	DIODE RBV-406B
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*1-624-073-11	PS-177 BOARD

CONNECTOR

CN019	*1-560-895-00	PIN, CONNECTOR 7P
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DIODE

D002	8-719-309-99	DIODE RBV-406B
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*A-6722-365-A	PS-164 BOARD, COMPLETE

*1-624-069-11	PS-164 BOARD
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CAPACITOR

C001	1-130-680-11	FILM	0.1MF	20%	125V
C002	1-162-577-51	CERAMIC	0.0022MF	20%	400V

CONNECTOR

CN010	*1-560-891-00	PIN, CONNECTOR 3P
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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
CH020	A,*1-564-687-11	PIN, CONNECTOR 3P				IC	
		DIODE		IC801	8-759-745-60	IC NJM4560D	
D020	8-719-200-23	ZENER DIODE 11E2				JACK	
		COIL		J801	1-507-995-11	JACK, MICROPHONE	
L001	A,1-421-765-11	FILTER, LINE		J802	1-507-833-00	JACK	
		RELAY				RESISTOR	
RY001	A,1-515-601-11	RELAY		R801	1-249-424-11	CARBON 3.9K 5% 1/4W	
*****				R802	1-249-404-00	CARBON 82 5% 1/4W	
	*1-624-068-11	PS-163 BOARD		R803	1-249-433-11	CARBON 22K 5% 1/4W	
		*****		R804	1-249-399-11	CARBON 33 5% 1/4W	
*****				R805	1-249-424-11	CARBON 3.9K 5% 1/4W	
	*1-624-083-11	JK-27 BOARD		R806	1-249-404-00	CARBON 82 5% 1/4W	
		*****		R807	1-249-433-11	CARBON 22K 5% 1/4W	
		DIODE		R808	1-249-399-11	CARBON 33 5% 1/4W	
D701	8-719-109-88	ZENER DIODE RD5.6ESB		R809	1-247-698-11	CARBON 68 5% 1/4W	
D703	8-719-109-88	ZENER DIODE RD5.6ESB		R810	1-247-698-11	CARBON 68 5% 1/4W	
		JACK				VARIABLE RESISTOR	
J701	1-537-115-11	TERMINAL BOARD		RV801	1-237-950-11	RES, VAR, CARBON 10K/10K	
		RESISTOR		*****			
R701	1-247-804-11	CARBON 75 5% 1/4W			*1-624-075-11	FR-32 BOARD	
R702	1-247-804-11	CARBON 75 5% 1/4W				*****	
R703	1-247-804-11	CARBON 75 5% 1/4W			*3-720-212-01	HOLDER (1) (FR), LED	
*****					*3-720-233-01	HOLDER (2) (FR), LED	
	*1-624-076-11	HP-36 BOARD			*3-720-298-01	FILTER (2)	
		*****			*3-721-374-01	SPACER, LEVEL METER	
		CAPACITOR				CAPACITOR	
C801	1-124-224-00	ELECT 47MF 20% 6.3V		C201	1-124-236-00	ELECT 47MF 20% 10V	
C802	1-124-224-00	ELECT 47MF 20% 6.3V				DIODE	
C804	1-124-446-11	ELECT 47MF 20% 10V		D201	8-719-812-32	LED TLY123	
C805	1-124-446-11	ELECT 47MF 20% 10V		D202	8-719-812-32	LED TLY123	
		CONNECTOR		D203	8-719-301-46	LED SEL2413E	
CH801	*1-564-002-00	PIN, CONNECTOR 3P		D204	8-719-301-46	LED SEL2413E	
CH802	*1-564-005-00	PIN, CONNECTOR 6P		D205	8-719-301-46	LED SEL2413E	
		DIODE		D206	8-719-301-46	LED SEL2413E	
D801	8-719-109-88	ZENER DIODE RD5.6ESB		D207	8-719-301-46	LED SEL2413E	
D802	8-719-109-88	ZENER DIODE RD5.6ESB		D208	8-719-301-46	LED SEL2413E	
				D209	8-719-920-05	LED TLG123A	
						IC	
				IC201	8-741-138-70	IC BX-1387	
						COIL	
				L201	1-408-421-00	INDUCTOR 100UH	

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>UNIT METER</u>				CN514	*1-564-002-00	PIN, CONNECTOR 3P	
ND201	1-520-492-11	METER UNIT, LEVEL		CN515	*1-564-020-00	PIN, CONNECTOR 10P	
<u>RESISTOR</u>				CN516	*1-564-015-00	PIN, CONNECTOR 5P	
R201	1-249-410-11	CARBON	270 5% 1/4W	CN517	1-562-887-11	CONNECTOR, F.P.C 20P	
R202	1-249-410-11	CARBON	270 5% 1/4W	CN519	1-562-887-11	CONNECTOR, F.P.C 20P	
R203	1-249-403-11	CARBON	68 5% 1/4W	<u>COMPOSITION CIRCUIT BLOCK</u>			
R204	1-249-403-11	CARBON	68 5% 1/4W	CP501	1-232-976-11	COMPOSITION CIRCUIT BLOCK	
R205	1-249-403-11	CARBON	68 5% 1/4W	CP502	1-232-847-11	COMPOSITION CIRCUIT BLOCK	
R206	1-249-409-11	CARBON	220 5% 1/4W	CP503	1-232-786-11	COMPOSITION CIRCUIT BLOCK	
R210	1-249-427-11	CARBON	6.8K 5% 1/4W	<u>DIODE</u>			
R211	1-249-427-11	CARBON	6.8K 5% 1/4W	D506	8-719-109-91	ZENER DIODE RD6.2ESB	
<u>VARIABLE RESISTOR</u>				D507	8-719-109-91	ZENER DIODE RD6.2ESB	
RV201	1-237-877-11	RES, VAR, SLIDE 10K/10K		D508	8-719-109-91	ZENER DIODE RD6.2ESB	
*****				D509	8-719-109-91	ZENER DIODE RD6.2ESB	
*A-6729-578-A MO-5 BOARD, COMPLETE				D510	8-719-109-91	ZENER DIODE RD6.2ESB	
*****				D511	8-719-109-91	ZENER DIODE RD6.2ESB	
<u>CAPACITOR</u>				<u>IC</u>			
C501	1-102-962-00	CERAMIC	30PF 5% 50V	IC501	8-759-140-03	IC UPD75108CW-096	
C502	1-102-962-00	CERAMIC	30PF 5% 50V	IC502	8-759-108-89	IC UPD7566CS-043	
C503	1-102-973-00	CERAMIC	100PF 5% 50V	<u>COIL</u>			
C504	1-102-973-00	CERAMIC	100PF 5% 50V	L501	1-408-421-00	INDUCTOR 100UH	
C505	1-124-446-11	ELECT	47MF 20% 10V	L502	1-408-421-00	INDUCTOR 100UH	
C506	1-161-772-11	CERAMIC	0.1MF 10% 25V	<u>TRANSISTOR</u>			
C507	1-124-446-11	ELECT	47MF 20% 10V	Q501	8-729-900-89	TRANSISTOR DTC144ES	
C508	1-161-051-00	CERAMIC	0.01MF 10% 25V	Q502	8-729-900-89	TRANSISTOR DTC144ES	
C509	1-101-004-00	CERAMIC	0.01MF 50V	Q503	8-729-900-89	TRANSISTOR DTC144ES	
C510	1-101-004-00	CERAMIC	0.01MF 50V	Q504	8-729-900-89	TRANSISTOR DTC144ES	
C511	1-101-004-00	CERAMIC	0.01MF 50V	<u>RESISTOR</u>			
C512	1-124-122-11	ELECT	100MF 20% 35V	R501	1-249-423-11	CARBON	3.3K 5% 1/4W
C513	1-161-021-11	CERAMIC	0.047MF 10% 25V	R502	1-249-423-11	CARBON	3.3K 5% 1/4W
<u>CONNECTOR</u>				R503	1-249-423-11	CARBON	3.3K 5% 1/4W
CN001	1-562-882-11	SOCKET, CONNECTOR 12P		R504	1-249-429-11	CARBON	10K 5% 1/4W
CN002	*1-562-990-11	SOCKET, CONNECTOR 14P		R505	1-249-429-11	CARBON	10K 5% 1/4W
CN501	*1-564-015-00	PIN, CONNECTOR 5P		R506	1-249-433-11	CARBON	22K 5% 1/4W
CN502	*1-564-002-00	PIN, CONNECTOR 3P		R507	1-249-436-11	CARBON	39K 5% 1/4W
CN503	*1-564-002-00	PIN, CONNECTOR 3P		R508	1-249-429-11	CARBON	10K 5% 1/4W
CN504	*1-564-005-00	PIN, CONNECTOR 6P		R509	1-249-429-11	CARBON	10K 5% 1/4W
CN505	*1-564-002-00	PIN, CONNECTOR 3P		R510	1-249-429-11	CARBON	10K 5% 1/4W
CN506	1-564-003-00	PIN, CONNECTOR 4P		R511	△ 1-249-458-11	CARBON	8.2 5% 1/4W F
CN507	*1-564-004-00	PIN, CONNECTOR 5P		R512	1-249-409-11	CARBON	220 5% 1/4W
CN508	*1-564-005-00	PIN, CONNECTOR 6P		R513	1-249-409-11	CARBON	220 5% 1/4W
CN509	*1-566-838-11	CONNECTOR, F.P.C 15P		R514	1-249-409-11	CARBON	220 5% 1/4W
CN510	*1-564-002-00	PIN, CONNECTOR 3P		R515	1-249-409-11	CARBON	220 5% 1/4W
CN511	*1-564-009-00	PIN, CONNECTOR 10P		R516	1-249-405-11	CARBON	100 5% 1/4W
CN512	*1-564-011-11	PIN, CONNECTOR 12P		R517	1-249-441-11	CARBON	100K 5% 1/4W
CN513	*1-564-002-00	PIN, CONNECTOR 3P		R518	1-249-429-11	CARBON	10K 5% 1/4W

When indicating parts by reference number, please include the board name.

Note:

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MO-5

RD-24

LM-8

TM-92

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>CRYSTAL</u>				<u>CRYSTAL</u>			
X501	1-567-160-21	OSCILLATOR, CERAMIC 4.19MHz		C415	1-161-051-00	CERAMIC 0.01MF 10% 25V	
X502	1-567-714-11	OSCILLATOR, CERAMIC		C416	1-162-282-31	CERAMIC 100PF 10% 50V	
*****				C417	1-162-282-31	CERAMIC 100PF 10% 50V	
				C418	1-162-282-31	CERAMIC 100PF 10% 50V	
				C998	1-161-772-11	CERAMIC 0.1MF 10% 25V	
				<u>CONNECTOR</u>			
				C999	1-161-021-11	CERAMIC 0.047MF 10% 25V	
				<u>COMPOSITION CIRCUIT BLOCK</u>			
				CN001	1-562-886-11	CONNECTOR, F.P.C 12P	
				CN002	*1-563-370-11	CONNECTOR, F.P.C 14P	
				CN402	*1-564-006-11	PIN, CONNECTOR 7P	
				<u>DIODE</u>			
				D401	8-719-911-19	DIODE 1SS119	
				D402	8-719-911-19	DIODE 1SS119	
				D403	8-719-100-30	ZENER DIODE RD5.1EB2	
				D404	8-719-911-19	DIODE 1SS119	
				D405	8-719-911-19	DIODE 1SS119	
				D406	8-719-911-19	DIODE 1SS119	
				D601	8-719-802-29	LED TLG211-GH	
				D602	8-719-802-29	LED TLG211-GH	
				D603	8-719-802-29	LED TLG211-GH	
				D604	8-719-802-29	LED TLG211-GH	
				D605	8-719-802-29	LED TLG211-GH	
				D606	8-719-800-39	LED TLY211	
				D607	8-719-802-29	LED TLG211-GH	
				D608	8-719-802-29	LED TLG211-GH	
				D609	8-719-802-29	LED TLG211-GH	
				D610	8-719-802-29	LED TLG211-GH	
				D611	8-719-802-29	LED TLG211-GH	
				<u>IC</u>			
				IC401	8-759-631-15	IC M50955-1	
				IC402	8-752-803-38	IC CXP5048H-099S	
				IC403	8-759-909-15	IC MSL915RS	
				IC404	8-759-922-96	IC S-8051ANR	
				<u>COIL</u>			
				L401	1-408-421-00	INDUCTOR 100UH	
				L402	1-408-421-00	INDUCTOR 100UH	
				<u>INDICATOR TUBE</u>			
				ND401	1-519-395-11	INDICATOR TUBE, FLUORESCENT	
				<u>TRANSISTOR</u>			
				Q401	8-729-178-54	TRANSISTOR 2SC2785	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q402	8-729-900-74	TRANSISTOR DTC143TS	
Q403	8-729-900-74	TRANSISTOR DTC143TS	
Q404	8-729-900-74	TRANSISTOR DTC143TS	
Q405	8-729-900-74	TRANSISTOR DTC143TS	
Q406	8-729-900-74	TRANSISTOR DTC143TS	
Q407	8-729-900-63	TRANSISTOR DTA124ES	
Q408	8-729-177-43	TRANSISTOR 2SD774	
Q409	8-729-900-63	TRANSISTOR DTA124ES	
Q410	8-729-117-54	TRANSISTOR 2SA1175	
Q411	8-729-117-54	TRANSISTOR 2SA1175	
RESISTOR			
R401	1-249-429-11	CARBON 10K 5% 1/4W	
R402	1-249-429-11	CARBON 10K 5% 1/4W	
R403	1-247-903-00	CARBON 1M 5% 1/4W	
R404	1-208-259-00	RES. MICRO (HIGH MEGA OHM) 10M	
R405	1-247-889-00	CARBON 270K 5% 1/4W	
R406	1-249-417-11	CARBON 1K 5% 1/4W	
R407	1-249-405-11	CARBON 100 5% 1/4W	
R408	1-249-440-11	CARBON 82K 5% 1/4W	
R409	1-249-436-11	CARBON 39K 5% 1/4W	
R410	1-247-889-00	CARBON 270K 5% 1/4W	
R411	1-249-437-11	CARBON 47K 5% 1/4W	
R412	1-249-421-11	CARBON 2.2K 5% 1/4W	
R413	1-249-409-11	CARBON 220 5% 1/4W	
R414	1-249-407-11	CARBON 150 5% 1/4W	
R415	1-249-407-11	CARBON 150 5% 1/4W	
R416	1-249-407-11	CARBON 150 5% 1/4W	
R417	1-249-407-11	CARBON 150 5% 1/4W	
R418	1-249-407-11	CARBON 150 5% 1/4W	
R419	1-249-407-11	CARBON 150 5% 1/4W	
R420	1-249-407-11	CARBON 150 5% 1/4W	
R421	1-249-407-11	CARBON 150 5% 1/4W	
R422	1-249-407-11	CARBON 150 5% 1/4W	
R423	1-249-407-11	CARBON 150 5% 1/4W	
CRYSTAL			
X401	1-567-160-21	OSCILLATOR, CERAMIC 4.19MHZ	
X402	1-527-997-00	VIBRATOR, CRYSTAL 32KHZ	
X403	1-567-346-11	OSCILLATOR, CERAMIC 5MHZ	

Ref.No	Part No.	Description	Remark
MISCELLANEOUS			

	1-464-705-11	ENCODER, ROTARY	
	1-464-881-22	SWITCH BLOCK, CONTROL (A)	
	1-464-882-21	SWITCH BLOCK, CONTROL (B)	
	1-464-883-11	SWITCH BLOCK, CONTROL (C)	
	1-526-882-00	OUTLET, AC	
	1-559-129-21	CORD, POWER (WITH CORD BUSHING)	
F001	1-532-743-11	FUSE, GLASS TUBE (2A/125V)	
F002	1-532-747-11	FUSE, GLASS TUBE (5A/125V)	
F003	1-532-745-11	FUSE, GLASS TUBE (3.15A/125V)	
F004	1-532-745-11	FUSE, GLASS TUBE (3.15A/125V)	
L951	1-464-503-41	S COIL SENSOR	
L952	1-464-491-51	T COIL SENSOR	
M952	A-6737-090-A	MOTOR ASSY, L (THREADING)	
M954	8-835-203-01	MOTOR, DC BHF-1914D (CAPSTAN)	
M955	X-3696-314-1	MOTOR ASSY, L (LOADING)	
PM951	1-454-396-21	SOLENOID, PLUNGER (BRAKE)	
PM952	1-454-393-21	SOLENOID, PLUNGER (PINCH)	
PM953	1-454-397-21	SOLENOID, PLUNGER (LIMIT)	
Q010	8-729-107-26	TRANSISTOR 2SD1585-K	
Q513	8-729-107-25	TRANSISTOR 2SD1585-L	
S951	1-571-023-11	SWITCH, LEAF (2 GANG) (CASSETTE DOWN/REC PROOF)	
S952	1-554-840-11	SWITCH, LEAF (THREADING END)	
T001	1-449-276-11	TRANSFORMER, POWER	

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
A-6767-709-A	COMMANDER ASSY (RMT-164)	
1-417-139-11	MATCHING TRANSFORMER, ANTENNA	
1-551-734-11	CORD, CONNECTION (RK-74A)	
1-558-076-41	CORD, CONNECTION	
1-558-856-11	CABLE, CONNECTION (CONTROL.T)	
1-559-457-11	CORD, CONNECTION	
3-680-777-00	LID, ACCESSORY CASE	
3-680-778-00	CASE, ACCESSORY	
*3-696-625-01	SHEET, PROTECTION	
*3-720-264-01	CUSHION (UPPER) (EDV-9300)	
*3-720-265-01	CUSHION (LOWER) (EDV-9300)	
*3-726-410-01	CUSHION (UPPER) (EDV-9500)	
*3-726-411-01	CUSHION (LOWER) (EDV-9500)	
*3-726-413-01	INDIVIDUAL CARTON (EDV-9300)	
*3-726-401-01	INDIVIDUAL CARTON (EDV-9500)	
3-769-534-21	MANUAL, INSTRUCTION (EDV-9500)	
3-769-534-31	MANUAL, INSTRUCTION (EDV-9300)	
4-886-821-01	SCREW, M3 CASE (EDV-9300)	

When indicating parts by reference number, please include the board name.

Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

HARDWARE LIST

SET-SCREW

7-621-712-26 SET-SCREW, SLOT 2.6X3FLAT POINT
 7-621-712-46 SET-SCREW, SLOT 2.6X5FLAT POINT
 7-683-174-21 SET-SCREW, SLOT 3X4 CONE POINT

RING

7-624-101-01 STOP RING 1.2 (E TYPE)
 7-624-118-01 RING, RETAINING E-2.5

SPRING PIN

7-626-302-31 SPRING PIN, 2.5X14

SCREW

7-621-259-35 SCREW +PTT 2.6X5 (S)
 7-621-259-35 SCREW +BVTT 2.6X5 (S)
 7-627-552-58 SCREW, PRECISION +P 1.7X5
 7-627-553-38 SCREW, PRECISION +P 2X3
 7-627-554-07 SCREW, PRECISION +P 2X2.2

7-628-253-90 SCREW +PS 2.6X4
 7-628-254-20 +PSW, 2.6X8
 7-682-645-01 SCREW +PS 3X4
 7-685-132-19 SCREW +P 2.6X5 TYPE2 NON-SLIT
 7-685-134-19 SCREW +P 2.6X8 TYPE2 NON-SLIT

7-685-645-79 SCREW +BVTP 3X6 TYPE2 IT-3
 7-685-645-79 SCREW +BVTP 3X6 TYPE2
 7-685-646-79 SCREW +BVTP 3X8 TYPE2 IT-3
 7-685-646-79 SCREW +BVTP 3X8 TYPE2
 7-685-647-79 SCREW +BVTP 3X10 TYPE2 IT-3

7-685-647-79 SCREW +BVTP 3X10 TYPE2
 7-685-650-79 SCREW +BVTP 3X16 TYPE2 IT-3
 7-685-650-79 SCREW +BVTP 3X16 TYPE2

TAPPING

7-685-105-19 TPG +P 2X8, TYPE 2, NON-SLIT

DRUM BLOCK

SCREW

7-621-255-19 SCREW +P 2X3
 7-621-255-22 SCREW +P 2X4
 7-628-254-00 SCREW +PS 2.6X5
 7-682-146-01 SCREW +P 3X5
 7-682-147-01 SCREW +P 3X6

7-682-247-09 SCREW +K 3X6
 7-682-646-09 SCREW +PS 3X5
 7-682-647-09 SCREW +PSW 3X6

BOLT

7-683-404-04 BOLT, HEXAGON SOCKET 3X8
 7-683-413-05 BOLT, HEXAGON SOCKET 2.6X8

NUT

7-684-024-04 N 4, TYPE 2

WASHER

7-688-004-11 W 4, MIDDLE

7-1. PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT AND REPLACEMENT

Note: For how to take off the cabinet and each board, refer to SECTION 2 in SERVICE MANUAL.

7-1-1. How to Thread the Tape when the FL Cassette Compartment Ass'y is Off.

- 1) Set the power switch to ON.
- 2) Press the accidental erasure prevention switch ❶, followed by the cassette-down switch ❷, to thread the tape.

[How to eject the cassette under this condition]

- Press the EJECT button.

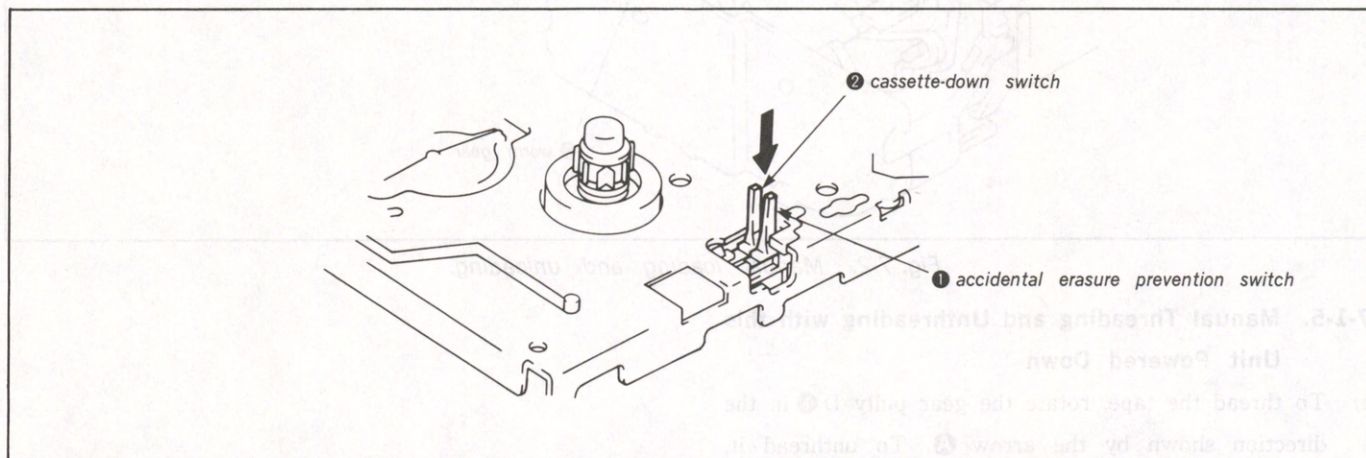


Fig. 7-1. How to thread the tape when the FL cassette compartment ass'y is off.

7-1-2. How to Put the Recorder in Playback Mode with the FL Cassette Compartment Taken Off

- 1) Complete threading the tape, following the step 7-1-1, and press the playback button.

7-1-3. How to Put the Recorder in Recording Mode with the FL Cassette Compartment Taken Off

- 1) Thread the tape as shown in 7-1-1, and press the accidental erasure prevention switch ❶ referring to Fig. 7-1.
- 2) Leaving the accidental erasure prevention switch ❶ pressed, press the recording button.

Note: Do not press the recording button, preceding to the accidental erasure prevention switch ❶, or the tape is unthreaded and ejected.

7-1-4. Manual Loading and Unloading with this Unit Powered Down (Refer to Fig. 7-2)

- 1) Push the accidental erasure prevention lever ① in the direction shown by the arrow to take off the claw.

- 2) Turn the worm gear ② in the direction shown by the arrow **a** until the loading is completed.
(For the unloading, turn the worm gear ② in the direction shown by the arrow **b**.)

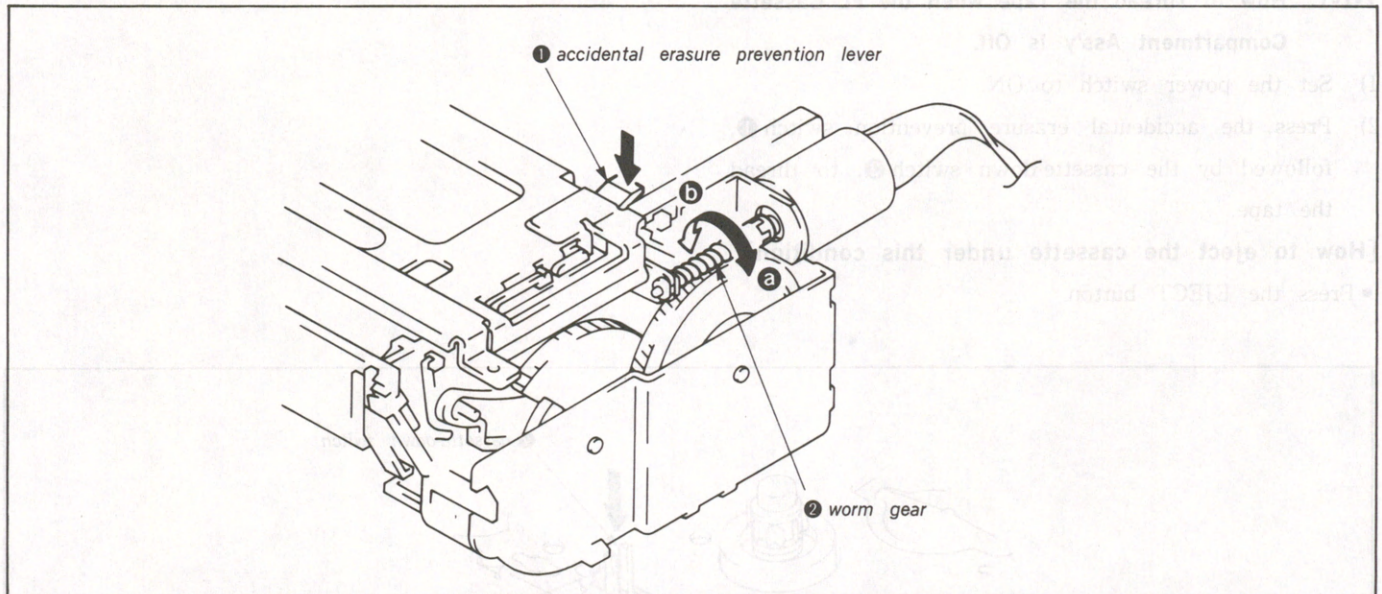


Fig. 7-2. Manual loading and unloading.

7-1-5. Manual Threading and Unthreading with this Unit Powered Down

- 1) To thread the tape, rotate the gear pulley D ① in the direction shown by the arrow **A**. To unthread it, rotate the gear pulley D ① in the direction shown by the arrow **B**.

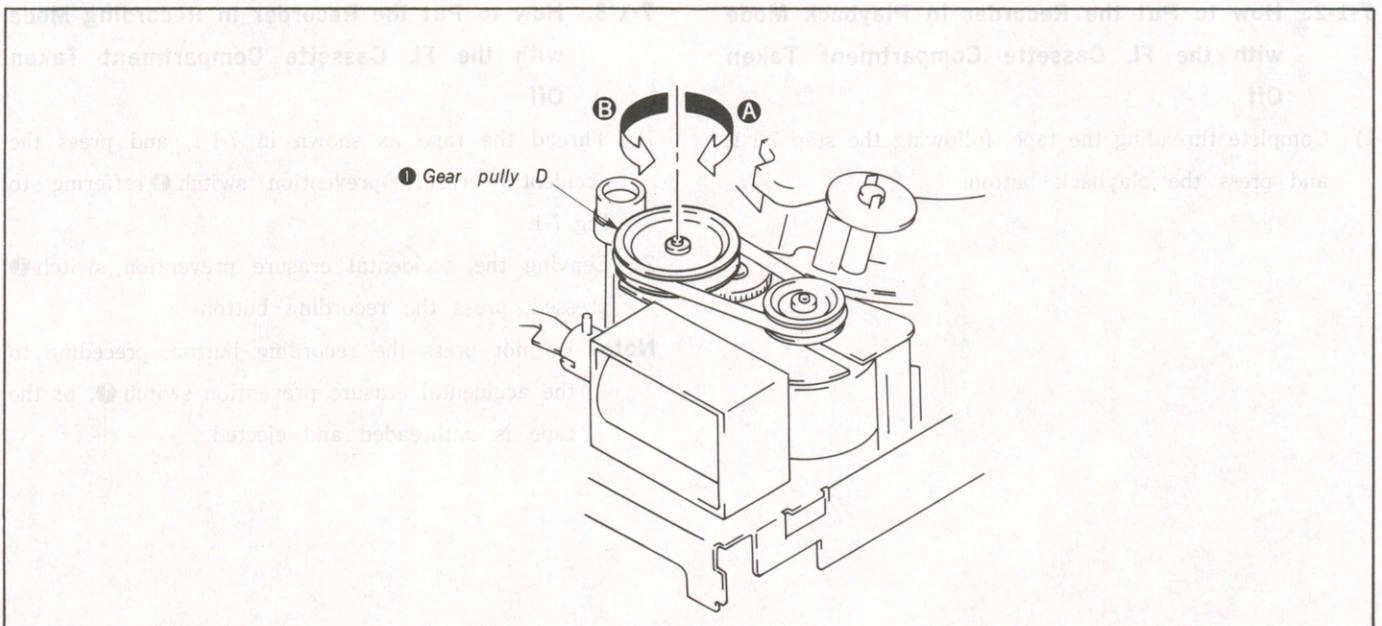


Fig. 7-3.

7-2. PERIODIC CHECKS AND MAINTENANCE

In order to let this unit fully display its function and performance, and to extend the life of the unit and of tapes, maintain and periodically check the unit as follows:

Note: After every repair of the unit, maintain it as follows, regardless of how long a user operates it.

7-2-1. Cleaning the Rotary Head Disk Assembly

- 1) Apply a chamois cloth (Jig Ref. No. J-7), dipped in cleaning fluid (Jig Ref. No. J-5), lightly to the rotary drum assembly, and slowly rotate the rotary head disk assembly by hand to clean it.

Note 1: Never try to clean it using the motor to turn it.

Note 2: Never move the chamois cloth at a right angle to the head tip. Otherwise the tip can be damaged.

7-2-2. Cleaning the Tape Movement System

- 1) Clean the surfaces (of the tape guide, the drum assembly, the capstan, the pinch roller, etc.) which the tape contacts during its movement, with a chamois cloth dipped in cleaning fluid beforehand.

7-2-3. Cleaning the Driving System

- 1) Clean the driving system with a cloth dipped in cleaning fluid beforehand.

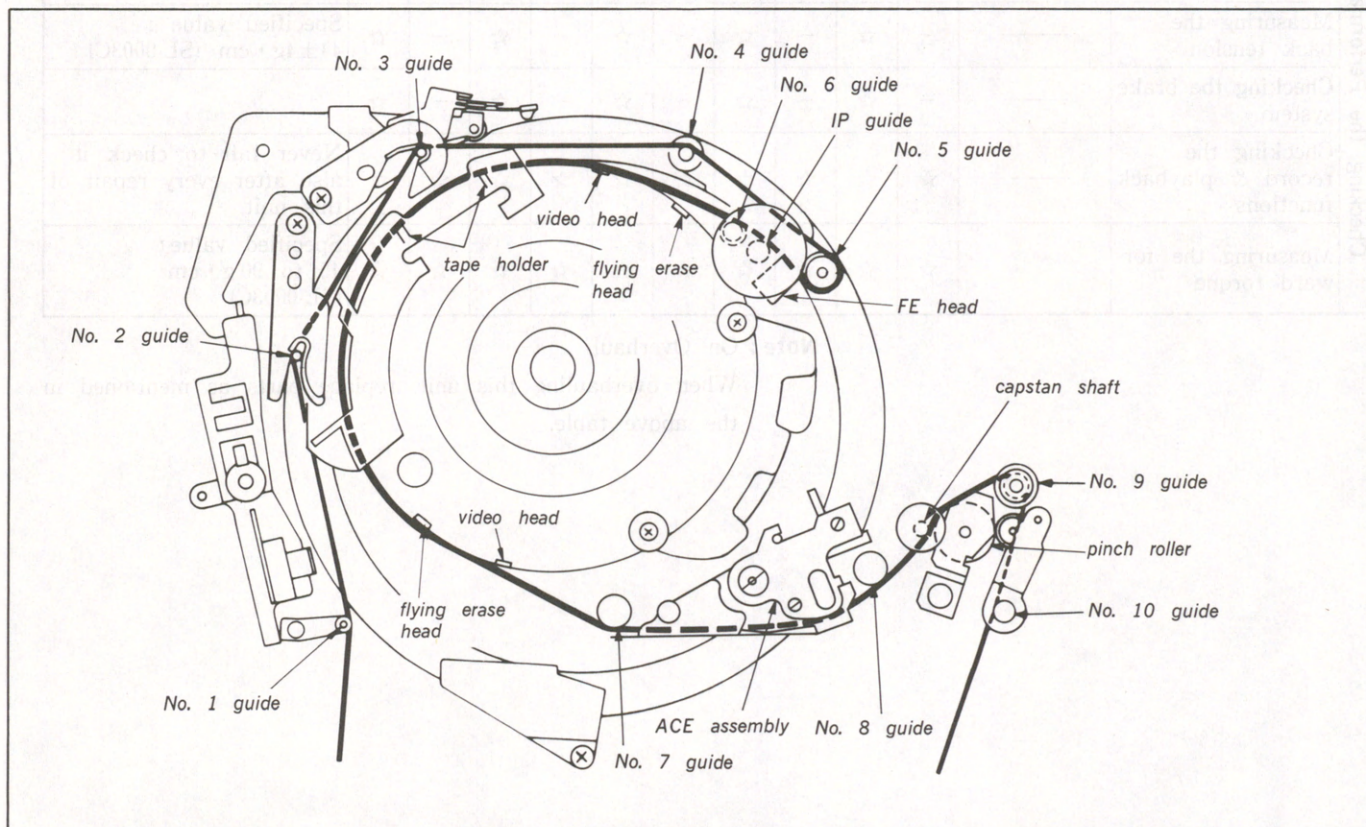


Fig. 7-4. Parts requiring cleaning.

7-2-4. Periodic Check Items

Check and maintain this unit on the following items according to how long a user has operated it.

○ Cleaning ☆ Checking

Maintenance & check		Operating hours	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
		Replacement part No.											
Tape Transportation System	Cleaning the tape transportation system	—	○	○	○	○	○	○	○	○	○	○	Never fail to clean and degauss them also after every repair of this unit.
	Cleaning and degaussing the AC ass'y	—	○	○	○	○	○	○	○	○	○	○	
	Cleaning and degaussing the rotary drum ass'y	—	○	○	○	○	○	○	○	○	○	○	The life of the head varies very much, depending on the operating conditions and the method.
Driving System	Rubber belt	3-669-327-00	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Never fail to clean it also after every repair of this unit.
	Cleaning the iron core and the opening in the solenoid	—	—	—	—	○	—	—	—	○	—	—	Wipe the iron core and the opening in the solenoid with dry cloth.
Checking the Performance	Abnormal sound	—	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace a part which makes abnormal sound.
	Measuring the back tension	—	—	☆	—	☆	—	☆	—	☆	—	☆	Specified value : $44 \pm 4 \text{ g} \cdot \text{cm}$ (SL-0003C)
	Checking the brake system	—	—	☆	—	☆	—	☆	—	☆	—	☆	
	Checking the record & playback functions	—	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Never fail to check it also after every repair of this unit.
	Measuring the forward torque	—	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Specified value : $45 \text{ to } 90 \text{ g} \cdot \text{cm}$ (SL-0003C)

Note : On Overhaul

When overhauling this unit, replace parts as mentioned in the above table.

7-2-5. Tools and Fixtures Required for Servicing

Ref.No.	Name	Part code	Carved jig No.	Use and remarks
J-1	Torque measurement tape	J-6080-003-C	SL-0003C	Forward torque and back tension measurement
J-2	Parallel plate	J-6086-570-A	SL-0657	Audio/CTL head lateral adjustment
J-3	Dental Mirror (handle) Dental Mirror (mirror)	J-6080-029-A J-6080-030-1	SL-5052	Tape path and tape traveling adjustment check
J-4	Alignment tape (KR5-1V)	8-969-995-92	—	Tracking and overall adjustment of picture quality, etc.
J-4	Alignment tape (KR5-1G)	8-969-995-61	—	
J-4	Alignment tape for ED beta (KR5-1ED)	8-192-532-01	—	
J-5	Cleaning fluid	Y-2031-001-0	—	
J-6	Thickness gauge	9-911-053-00	—	
J-7	Chamois cloth	2-034-697-00	—	Cleaning
J-8	Head demagnetizer	Widely available	—	Damagnetization of video head and audio head
J-9	Cleaning cassette tape	8-888-004-00	—	Cleaning video head
J-10	Dihedral adjustment screw	J-6080-013-A	SL-0013	Video head dihedral adjustment
J-11	Video head checker	7-732-080-01	SL-5151	Checking video head

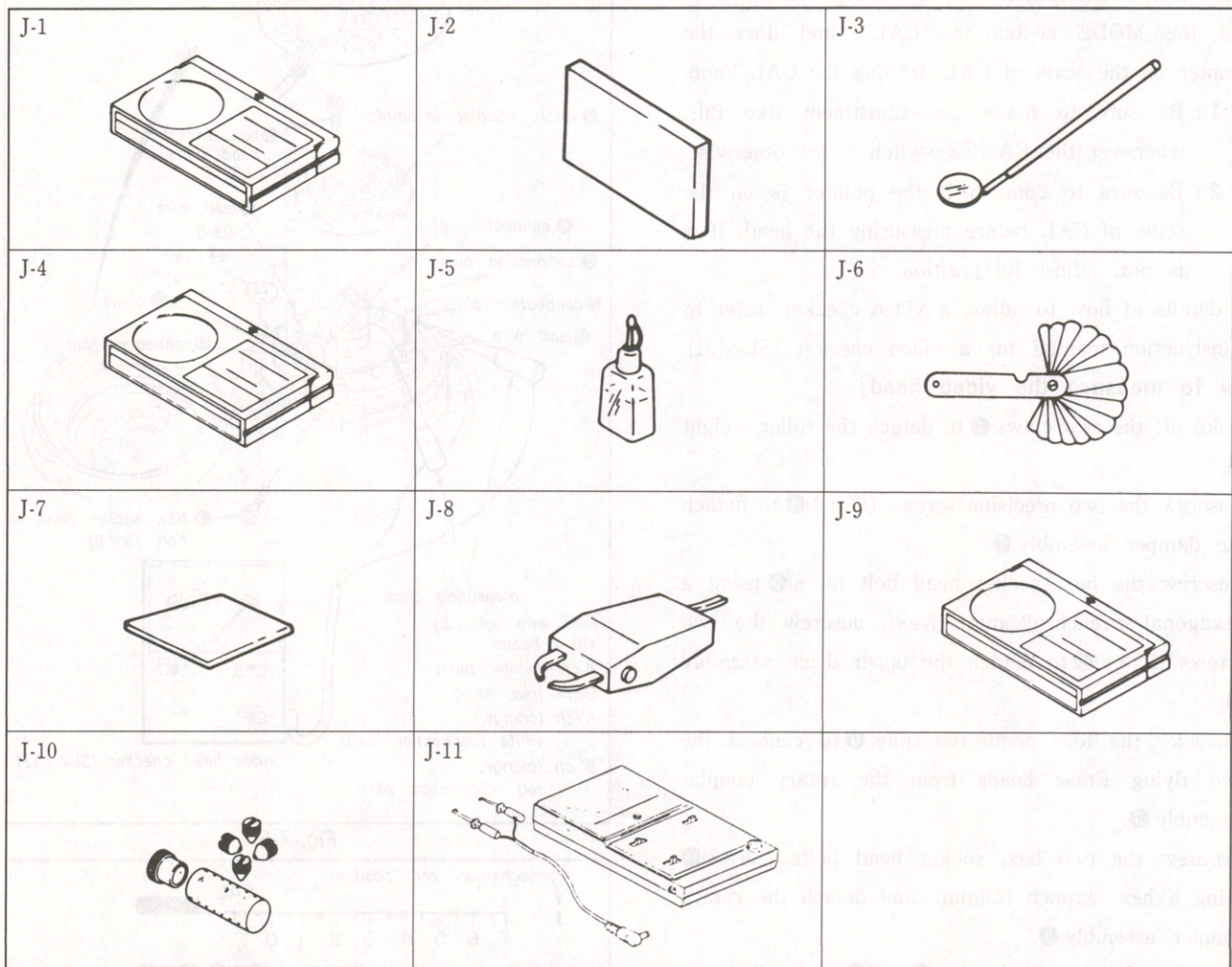


Fig. 7-5. Tools and fixtures required for servicing.

7-3. CHECK, ADJUSTMENT AND REPLACEMENT

7-3-1. Confirming how the Video Head is Worn

(Refer to Fig. 7-6 and Fig. 7-7)

As the accuracy of the check depends on the state of the heads and the precision of the checker, the results should be taken only as an indication of the state of wear.

[Adjustment of video head checker]

1) Mechanical zero

Confirm that the pointer of the video head checker is at the mechanical zero position (left end of the scale). If it is not, move it to the position using the mechanical zero VR.

2) Battery voltage check

Set the MODE switch to "BATT", and the POWER switch to ON, respectively. At the time, the deflection of the pointer should be within the "BATT" scale.

3) Calibrations adjustment

Set the MODE switch to "CAL", and does the pointer on the scale of CAL, turning the CAL knob.

Note 1: Be sure to make the adjustment like this, whenever the RANGE switch is set otherwise.

Note 2: Be sure to confirm if the pointer is on the scale of CAL before measuring the head. If it is not, adjust its position.

*For details of how to adjust a video checker, refer to an instruction manual for a video checker (SL-5151).

[How to measure the video head]

- 1) Take off the two claws ① to detach the roller weight ②.
- 2) Unscrew the two precision screws (P2×3) ③ to detach the damper assembly ④.
- 3) Unscrew the hex. socket head bolt (3×8) ⑤ using a hexagonal wrench (2.5mm). Next, unscrew the two screws (P3×8) ⑥ to detach the upper drum assembly ⑦.
- 4) Unsolder the four connection pins ⑧ to connect the two flying Erase heads from the rotary coupler assembly ⑨.
- 5) Unscrew the two hex. socket head bolts (2.6×8) ⑩ using a hex. wrench (2.0mm), and detach the rotary coupler assembly ⑨.
- 6) Unsolder the two lead wires ⑪ and ⑫, extending out of two recording/playback video heads, and the two connection pins ⑬ and ⑭.

- 7) Attach the measuring clips to the unsoldered connection pin ⑬ and lead wire ⑪ which extends out of the video head.

Note: keep the pin more than 1.5cm away from the wire.

- 8) Set the RANGE switch on the video head checker to "B" in A-ch or B-ch, and to "A" in A'-ch or B'-ch. Next, set the MODE switch to "MEAS". The pointer fluctuates, depending on how the heads are worn.

- 9) Referring to 7) and 8), attach the measuring clips to the unsoldered lead wire ⑫ and connection pin ⑭.

Note: One video head may not be worn the same as the other, so be sure to measure both. (Fig. 7-7)

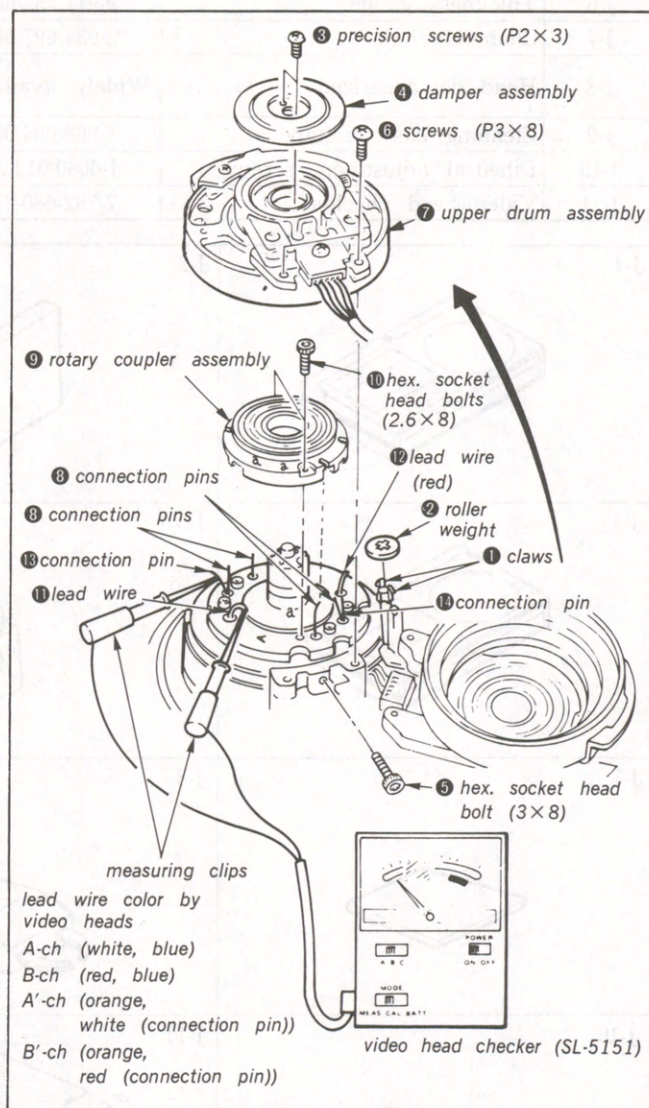


Fig. 7-6.

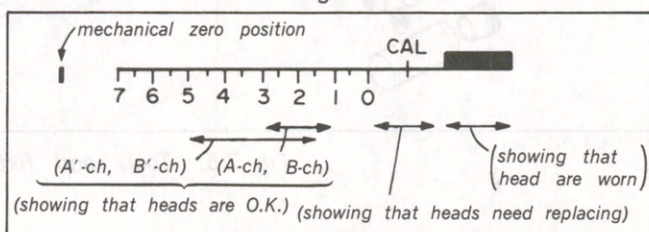


Fig. 7-7. measured value.

7-3-2. Detaching Rotary Head Disk Assembly

(Fig. 7-8)

Note: In detaching the rotary head disk assembly, never move the two screws clamping the guide arm assembly. Otherwise a centering will be required later. (Refer to 7-3-7.)

- 1) Unscrew the two precision screws (P2×3)① to detach the damper assembly ②.
- 2) Unscrew the hex. socket head bolt (3×8)③ using a hex. wrench (2.5mm)
- 3) Unscrew the two screws (P3×8)④ to detach the upper drum assembly ⑤.
- 4) Unsolder the four connection pins ⑦ from the rotary

coupler assembly ⑥.

- 5) Unscrew the two hex. socket head bolts (2.6×8)⑧, using a hex. wrench (2.0mm), and detach the rotary coupler assembly ⑥.
- 6) Unsolder the two lead wires⑩ and the two connection pins⑪ from the rotary head disk intermediary board ⑨.
- 7) Unscrew the four hex. socket head bolts (with a washer) (2.6×8)⑫, using a hex. wrench (2.0mm), and detach the rotary head disk assembly ⑬.

Note: At the time, never touch the head tip and fully see to it that it does not strike against an object to damage.

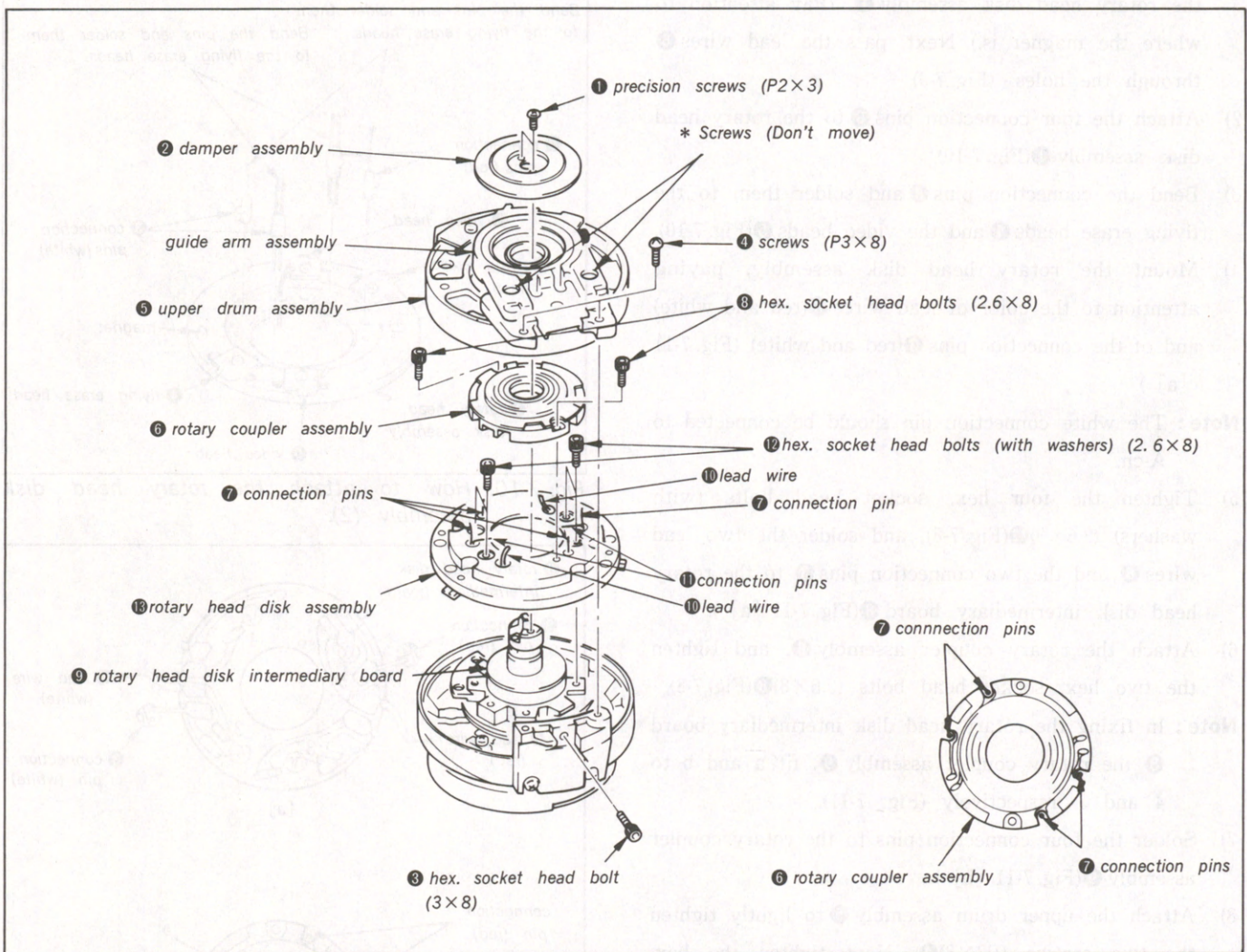


Fig. 7-8. How to detach the rotary head disk assembly.

7-3-3. Fitting Rotary Head Disk Assembly

Accessory adjusting jigs: Spacer 1 and Spacer 2.

Note 1:

Keep these jigs with care after replacing the rotary head disk assembly into another. They are required in replacing the guide arm assembly and the rotary coupler assembly. (They are not attached to the guide arm assembly and the rotary coupler assembly.)

Note 2:

Never touch the head tip, and fully see to it that it does not strike against an object to damage.

- 1) Solder the two lead wires ⑥ to the video head ② of the rotary head disk assembly ①. (Pay attention to where the magnet is.) Next, pass the lead wires ⑥ through the holes. (Fig. 7-9)
- 2) Attach the four connection pins ③ to the rotary head disk assembly ① (Fig. 7-10).
- 3) Bend the connection pins ③ and solder them to the flying erase heads ④ and the video heads ⑤ (Fig. 7-10).
- 4) Mount the rotary head disk assembly, paying attention to the color of lead wires ⑥ (red and white) and of the connection pins ③ (red and white) (Fig. 7-11 [a]).

Note: The white connection pin should be connected to A-ch.

- 5) Tighten the four hex. socket head bolts (with washers) (2.6×8) ⑫ (Fig. 7-8), and solder the two lead wires ⑥ and the two connection pins ③ to the rotary head disk intermediary board ⑧ (Fig. 7-11 [a]).
- 6) Attach the rotary coupler assembly ⑨, and tighten the two hex. socket head bolts (2.6×8) ⑧ (Fig. 7-8).

Note: In fixing the rotary head disk intermediary board ⑧ the rotary coupler assembly ⑨, fit a and b to 4 and 3, respectively (Fig. 7-11).

- 7) Solder the four connection pins to the rotary coupler assembly ⑨ (Fig. 7-11 [b]).
- 8) Attach the upper drum assembly ⑤ to lightly tighten the two screws (P3×8) ④. Next tighten the hex. socket head bolt (3×8) ③ and then firmly does the two screws (P3×8) ④ (Fig. 7-8).

Note: In fixing the upper drum assembly, take care not to strike it against the head chip.

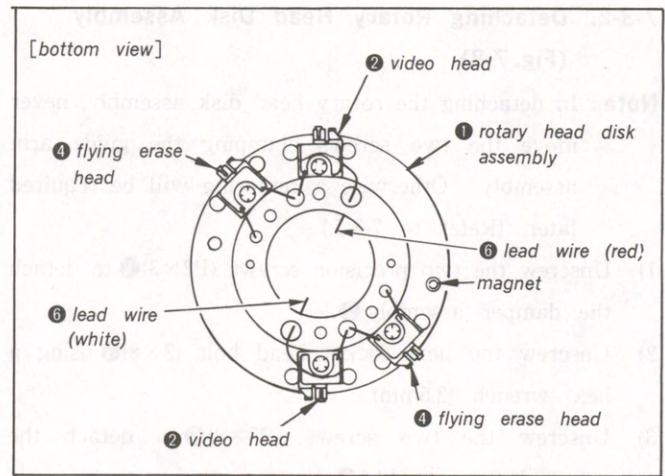


Fig. 7-9. How to attach the rotary head disk assembly (1).

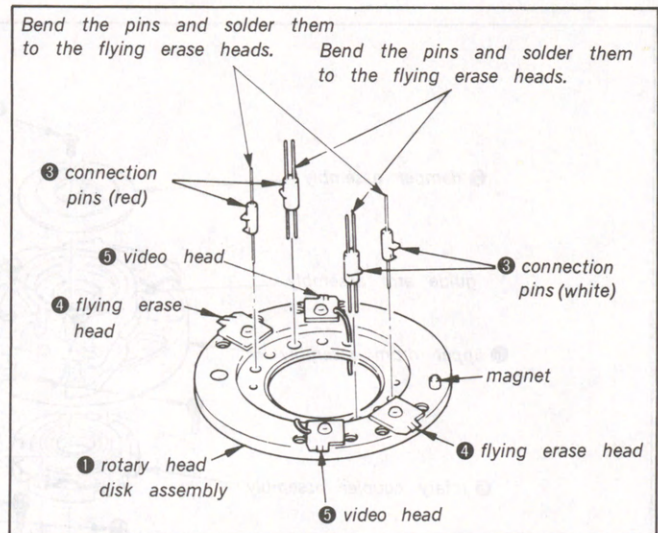


Fig. 7-10. How to attach the rotary head disk assembly (2).

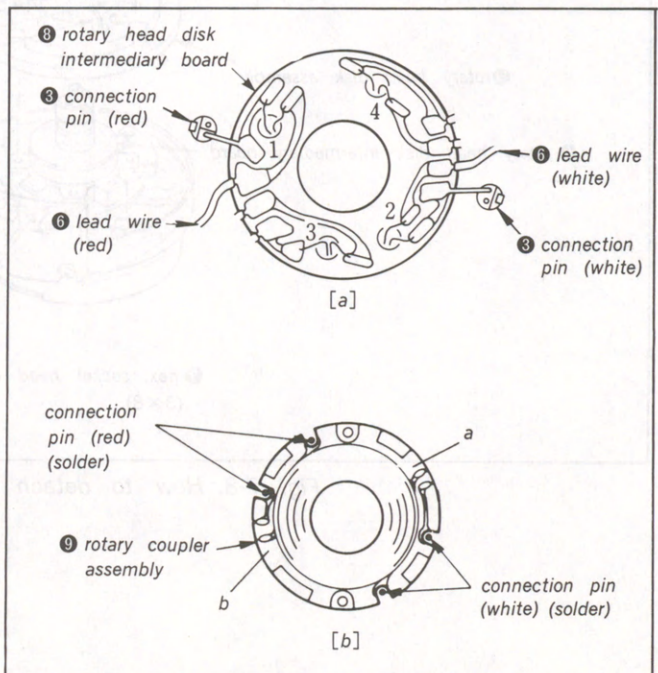


Fig. 7-11. How to attach the rotary head disk assembly (3).

- 9) Confirm if Spacer 1 comes between the flying erase head rotary transformer and the upper drum assembly, and if Spacer 2 does not. Except for the above situation, adjust the size of the gap between the transformer and assembly (Fig. 7-12).
- 10) Attach the damper assembly ② to tighten the two precision screws (P2×3) (Fig. 7-8).

7-3-4. Adjusting Flying Erase Head Rotary Transformer Gap (Fig. 7-12)

- 1) Loosen the hex. socket head bolt ① attached to the guide arm assembly (don't take off) to let the upper ring assembly ② float slightly over the rotary transformer.
- 2) Insert spacer 1 ③ between the rotary transformer and the upper ring assembly ②, and push the upper ring assembly ② downward.

Note: See to it that the upper ring assembly ② does not tilt.

- 3) While holding the upper ring assembly ② down, tighten the hex. socket head bolt ①.

Note: Take care not to move the upper ring assembly ② while tighten the hex. socket head bolt ①.

- 4) Pull off spacer 1 ③, and confirm if spacer 2 ④ does not come between the rotary transformer and the upper ring assembly ②. If it does, repeat the steps 1) to 4).

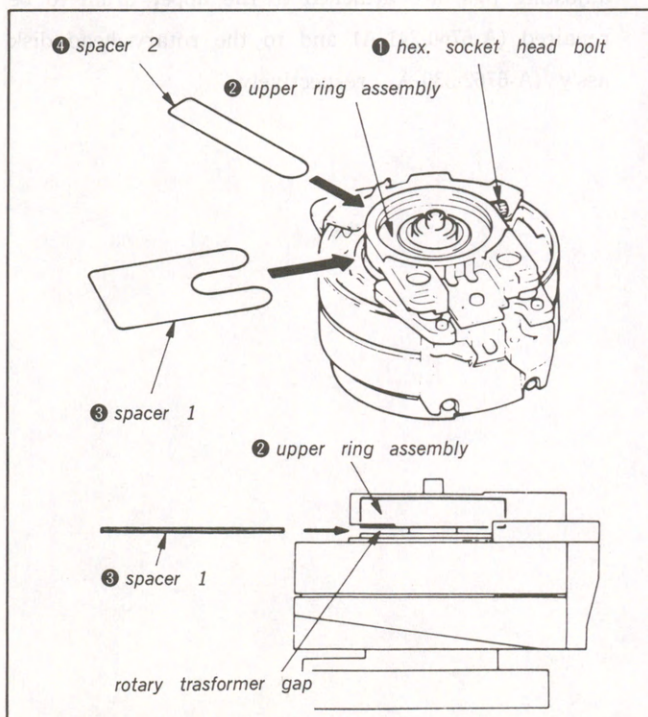


Fig. 7-12. Adjusting the flying erase head rotary transformer gap.

7-3-5. How to Take off the Upper Drum (Fig. 7-13)

- 1) Unscrew the two precision screws ① to take off the damper assembly ②.
- 2) Unscrew the two screws ③ to take off the guide arm assembly ④.
- 3) Unscrew the hex. socket head bolt ⑤ using a hex. wrench.
- 4) Unscrew the two screws ⑥ to take off the upper drum ⑦ and the upper drum mounting plate ⑧ together.

Note: Take full care not to touch parts around the drum.

- 5) Unscrew the two screws ⑨ to detach the upper drum mounting plate ⑧ from the upper drum ⑦.
- 6) Unscrew the two screws ⑩ to detach the tape retainer spring assembly ⑪ from the upper drum ⑦.

Note: In taking off the upper drum, never move the hex. socket head bolt ⑫. Otherwise the gap will require adjusting (Refer to 7-3-4) later.

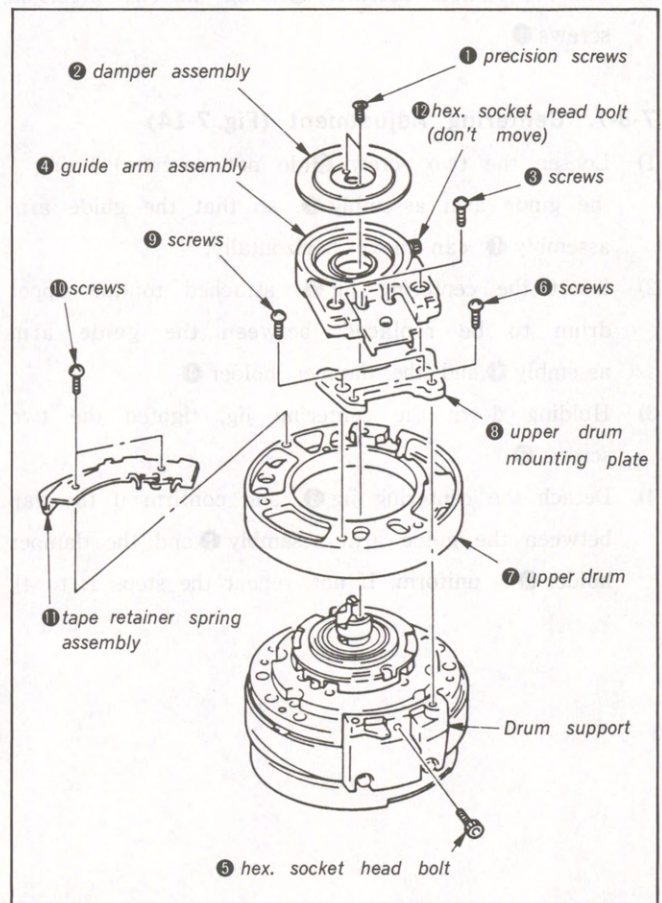


Fig. 7-13. How to take off the upper drum.

7-3-6. How to Fix the Upper Drum (Fig. 7-13)

Accessory adjusting jig: Centering jig.

Note: Keep this jig carefully after replacing the upper drum into another. It is required also in replacing the guide arm assembly. (It does not accompany the assembly.)

- 1) Fix the tape retainer spring assembly ⑩ using two screws ⑩.
- 2) Fix the upper drum mounting plate ⑧ using the two screws ⑨.
- 3) Lightly clamp the upper drum mounting plate ⑧, fixed to the upper drum ⑦, onto the drum support, using the two screws ⑥.
- 4) Tighten the hex. socket head bolt ⑤, while pushing by hand the upper drum ⑦ down to the upper drum mounting plate ⑧.
- 5) Firmly tighten the two screws ⑥.
- 6) Fix the guide arm assembly ④ using the two screws ③.
- 7) Make the centering adjustment (Refer to 7-3-7.)
- 8) Fix the damper assembly ② using the two precision screws ①.

7-3-7. Centering Adjustment (Fig. 7-14)

- 1) Loosen the two screws ② (do not unscrew) fixing the guide arm assembly ①, so that the guide arm assembly ① can move horizontally.
- 2) Insert the centering jig ③, attached to the upper drum to be replaced, between the guide arm assembly ① and the damper holder ④.
- 3) Holding down the centering jig, tighten the two screws ②.
- 4) Detach the centering jig ③, and confirm if the gap between the guide arm assembly ① and the damper holder ④ is uniform. If not, repeat the steps 1) to 4).

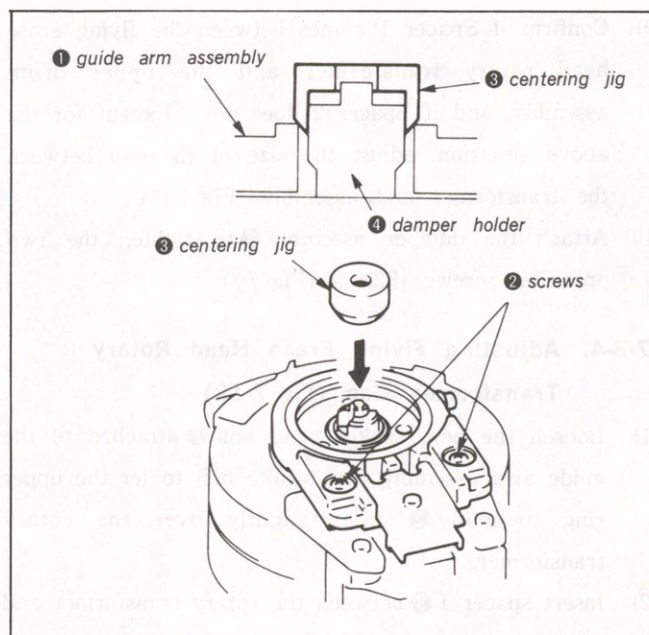


Fig. 7-14 Centering adjustment.

7-3-8. Matters to be Attended to when Replacing the Rotary Coupler Ass'y and the Guide Arm Ass'y

- 1) Make sure to adjust the gap (refer to 7-3-4.) after replacing the rotary coupler ass'y.
- 2) Make sure to make the centering adjustment (refer to 7-3-7.) after replacing the guide arm ass'y. The centering jig and spacers 1/2, which serve as adjusting jigs, are attached to the upper drum to be repaired (A-6760-241-A) and to the rotary head disk ass'y (A-6762-330-A), respectively.

7-3-9. Video Head Dihedral Check and Adjustment

This adjustment is generally unnecessary, sometimes except when the video head disk is replaced. (A video head disk used for maintenance has been precisely adjusted through a microscope, and hardly requires to be readjusted.) When playing back the alignment tape to judge whether or not the video head dihedral angle is correctly fixed, be sure to set the tracking control knob to center click. Otherwise (if the tracking is off position) a picture will be reproduced as if it were off, even if the dihedral angle is correctly fixed. Before adjusting the dihedral angle, the ACE assembly position must be already aligned (refer to the section where how to adjust the tape path is described.).

[Checking Method]

Set the tracking control knob to center click to play back the β II monoscope signal of the alignment tape, and confirm if any of the vertical monoscope lines just below the switching pulse are reproduced double. If not, the dihedral angle is found to be correctly fixed and it does not need adjusting. If so, adjust it as shown below.

[Adjusting Method]

- 1) As Fig. 7-15 shows, insert the two dihedral adjusting screws (Jig Ref. No. J-10) into the adjusting screw holes on both sides of the video head-Ach (Fig. 7-16), so that the tops of the screws become flush with the upper face of the video head disk. (If they are screwed insufficiently, the heads of them strike against the upper drum and the video head disk does not rotate. Conversely, if they are too much, the head base is moved and the video head dihedral angle deflects widely.)

Note: Fully note that the video head-Ach is placed just below the portions which are marked with white silk. The other video head serves as a reference one, so do not move it.

- 2) Further screw either one of the two dihedral adjusting screws until it become hardly possible to do so. Screwing it much further, the video head moves and the dihedral angle can be fixed correctly.
- 3) Playback the β II monoscope signal of the alignment tape, keeping the dihedral adjusting screws in the holes, and check the way the vertical monoscope lines are reproduced. When the dihedral quantity of the lines is larger than before adjusting the dihedral

- angle, loosen the dihedral adjusting screw which has just been screwed, and screw the other one.
- 4) After adjusting the dihedral angle, unscrew the adjusting screws to confirm if the angle is still fixed correctly.

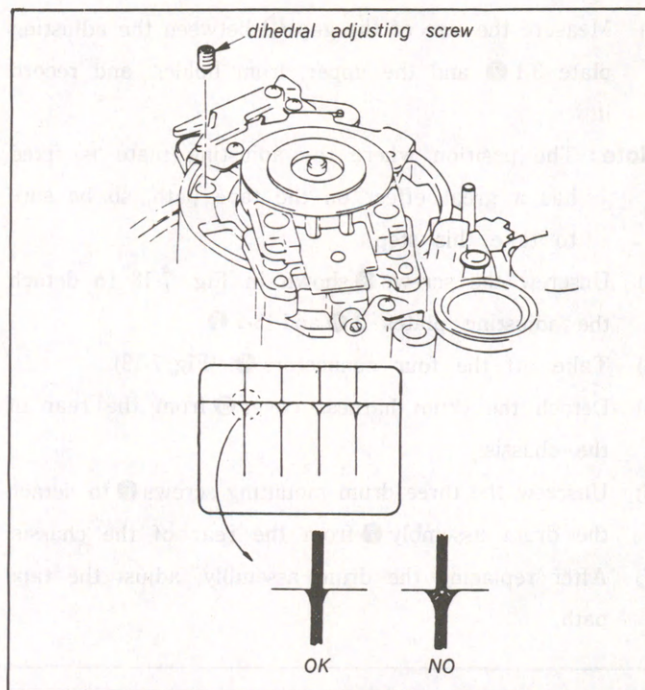


Fig. 7-15. Video head dihedral adjustment (1).

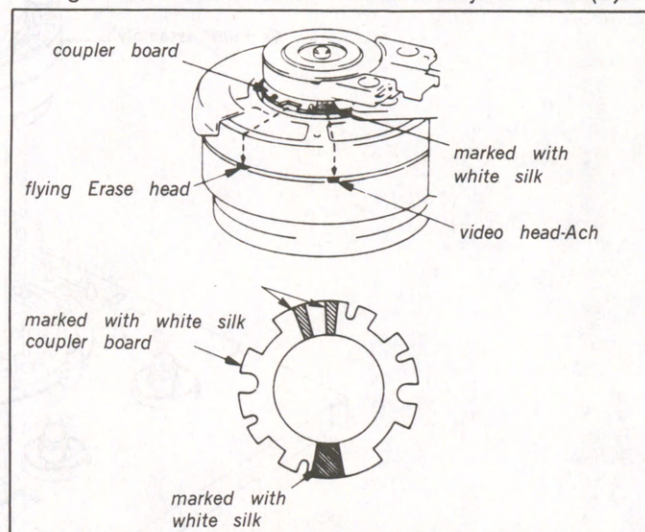


Fig. 7-16. Video head dihedral adjustment (2).

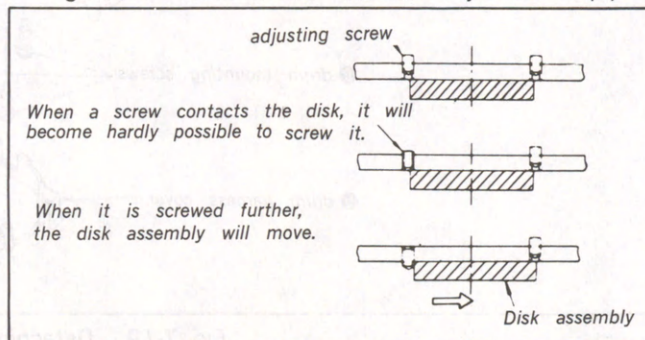


Fig. 7-17. Video head dihedral adjustment (3).

7-3-10. Replacing the Drum Assembly

- 1) Measure the size of the gap **A** between the adjusting plate 2 **1** and the upper drum holder, and record it.

Note: The position where the adjusting plate is fixed has a great effect on the tape path, so be sure to take this step.

- 2) Measure the size of the gap **B** between the adjusting plate 3-1 **2** and the upper drum holder, and record it.

Note: The position where the adjusting plate is fixed has a great effect on the tape path, so be sure to take this step.

- 3) Unscrew the screws **3** shown in Fig. 7-18 to detach the adjusting plates 2 **1** and 3-1 **2**.
- 4) Take off the four connectors **4** (Fig. 7-19).
- 5) Detach the drum harness cover **5** from the rear of the chassis.
- 6) Unscrew the three drum mounting screws **6** to detach the drum assembly **7** from the rear of the chassis.
- 7) After replacing the drum assembly, adjust the tape path.

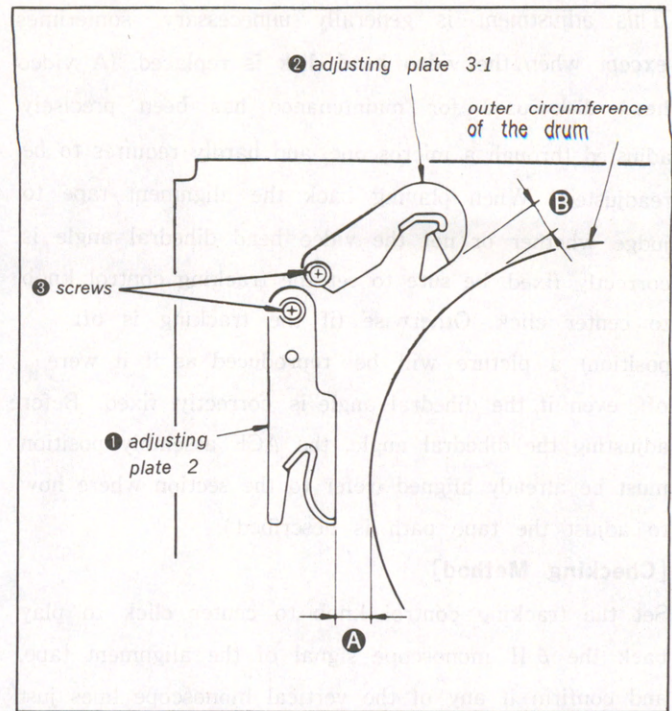


Fig. 7-18. Detecting the positions of the adjusting plates 2 and 3-1.

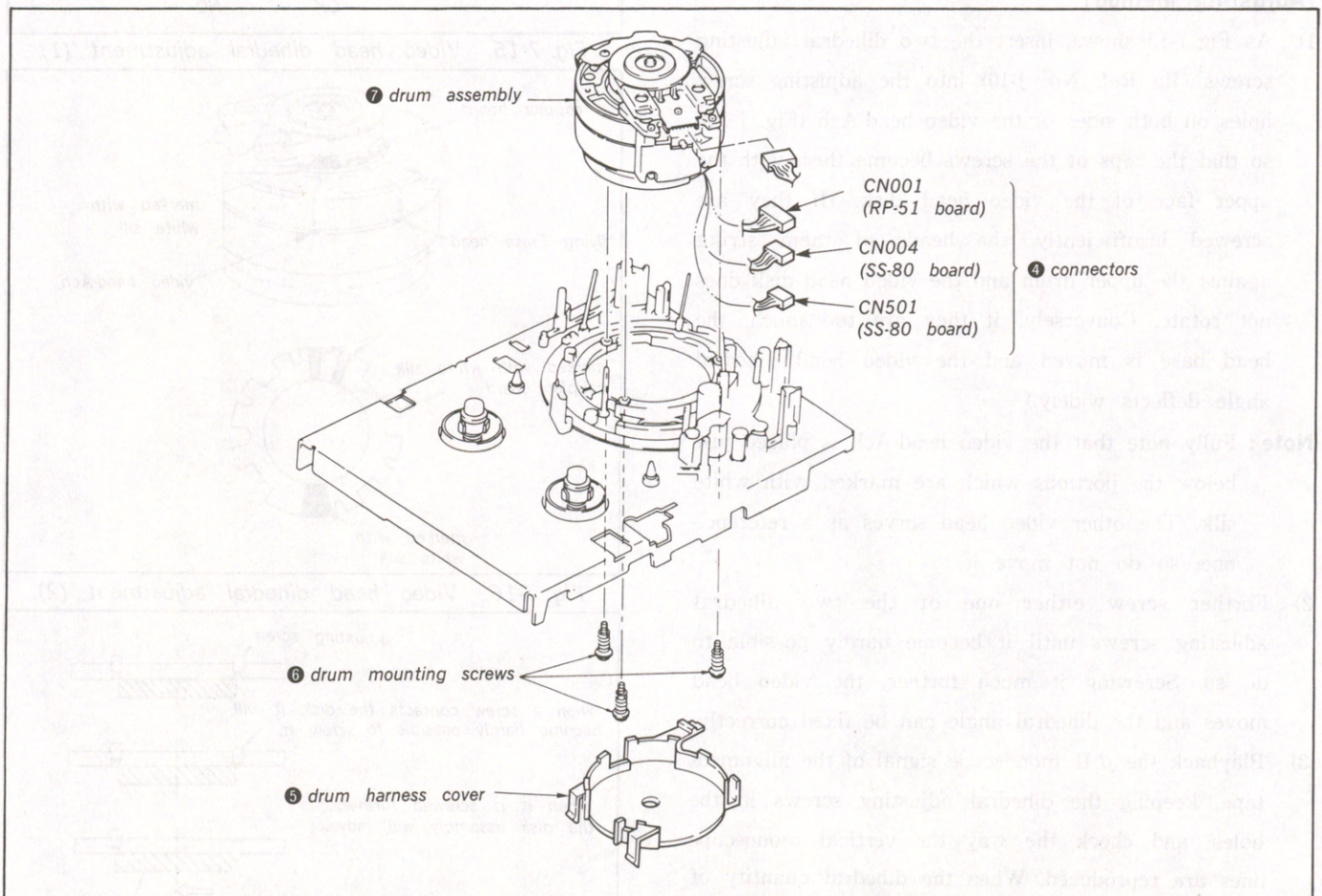


Fig. 7-19. Detaching the drum assembly.

7-3-11. Adjusting the Motor Gap when Replacing the Drum Assembly (Fig. 7-20)

*When replacing the drum assembly, keep the motor rotor more than 0.3mm and less than 0.6mm away from the coil.

[Method]

- 1) In re-assembling the drum, confirm if the gauge, which is 0.3mm wide and attached to the drum used for assembling and maintenance, can be inserted into the gap by means of detached spacers, and if the one, which is 0.6mm wide and attached also to the drum, cannot.
- 2) In case of N.G. in step 1, do not use the detached spacers. Instead, combine the accessory spacers (0.3mm×4pcs) with one another to fix the gap correctly (Fig. 7-21)

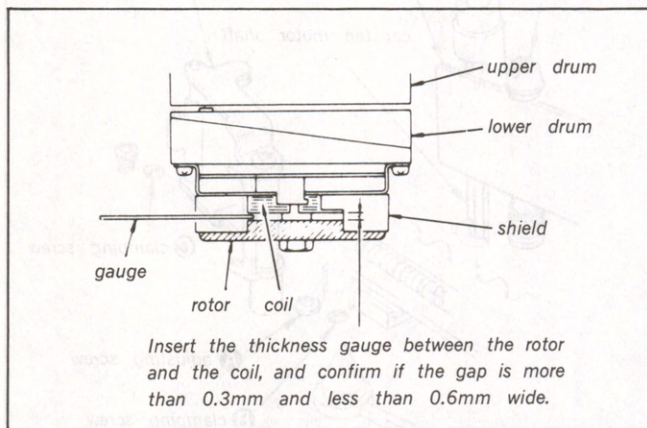


Fig. 7-20. Checking the motor gap when replacing the drum assembly.

7-3-12. How to Detach the Stator and the Rotor when Replacing the Drum (Fig. 7-21)

- 1) Unscrew the nut ① and the washer ②.
- 2) Detach the rotor ③ from the stator ④.
- 3) Unscrew the two screws (PS3×5) ⑤ to detach the stator ④ from the drum assembly.

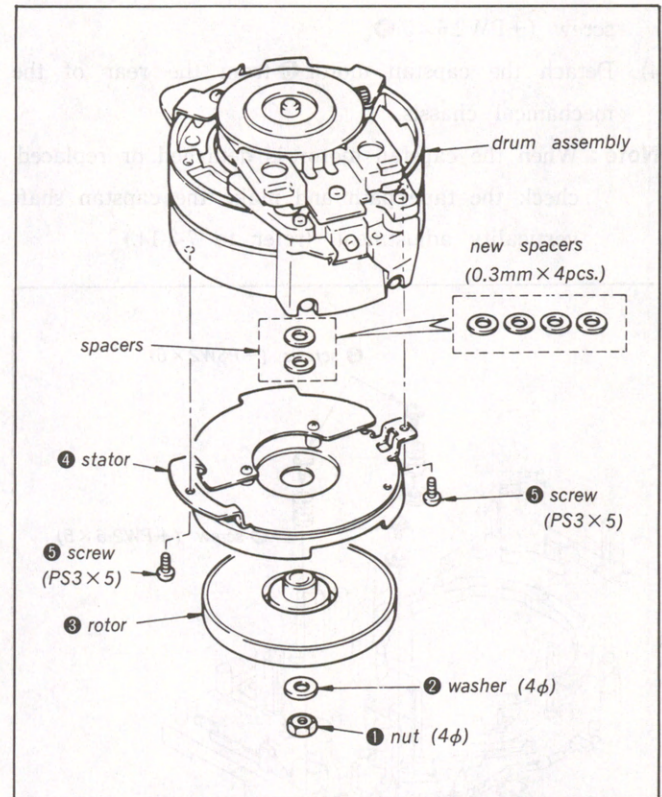


Fig. 7-21. How to detach the stator and the rotor when replacing the drum.

7-3-13. How to Detach the Capstan Motor

(Fig. 7-22)

- 1) Unscrew the screw ① and detach the rotor holder ② from the rear of the mechanical chassis.
- 2) Detach the cover ③ from the rear of the mechanical chassis.
- 3) Unscrew the two screws (+PSW2×6)④ and the screw (+PW2.6×5)⑤.
- 4) Detach the capstan motor ⑥ from the rear of the mechanical chassis.

Note: When the capstan motor is detached or replaced, check the tape path and make the capstan shaft verticality adjustment. (refer to 7-3-14.)

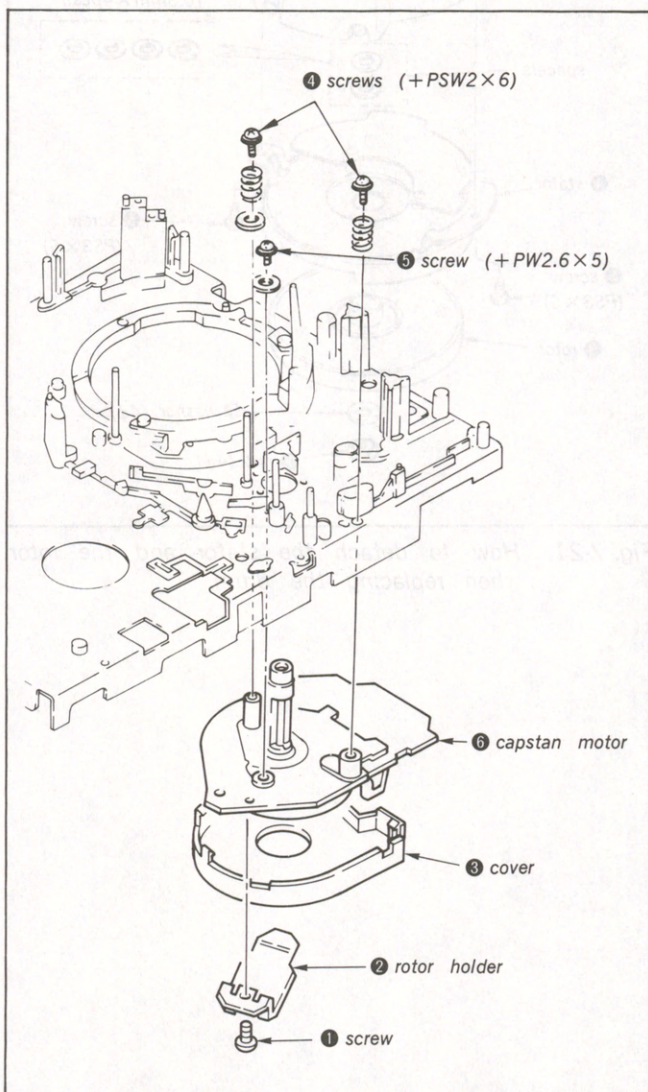


Fig. 7-22. How to detach the capstan motor.

7-3-14. Capstan Shaft Verticality Adjustment

After replacing or detaching the capstan motor, be sure to adjust the capstan shaft verticality as follows:

- 1) Loosen the clamping screws B and C.
- 2) As shown in Fig. 7-23. apply the parallel plate (jig Ref. No. J-2) horizontally to the capstan motor shaft and to the No.8 guide sleeve.
- 3) Turn the adjusting screw A to let the capstan motor shaft stand vertically.
- 4) As shown in Fig. 7-24. apply the parallel plate vertically to the capstan motor shaft and to the No. 10 guide shaft of the pinch arm assembly.

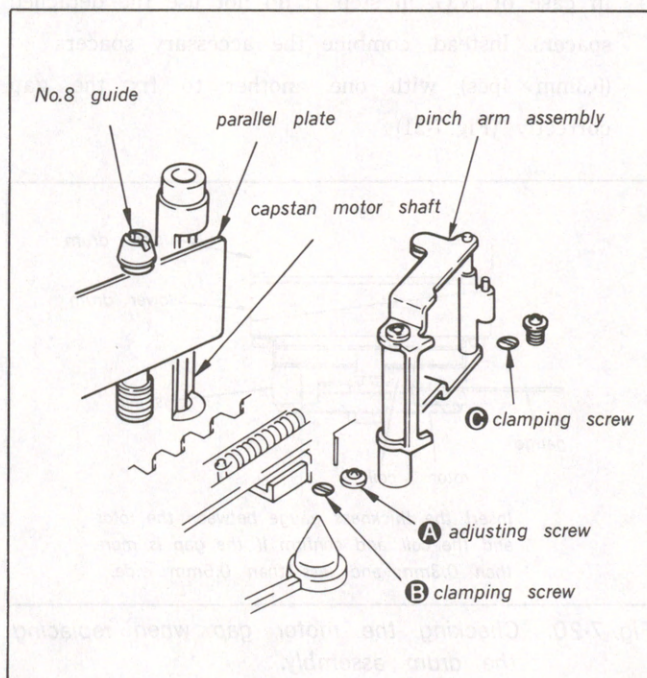


Fig. 7-23.

- 5) Screw the clamping screw **C** and clamp the capstan motor, in order to let the capstan motor shaft stand vertically.
- 6) Apply the parallel plate again as shown in Fig. 7-23, and check the verticality of the capstan motor shaft. If it does not stand vertically, repeat the steps 3) to 6).
- 7) Screw the clamping screw **B** to clamp the capstan motor.
- 8) Perform the adjustment, following the section where how to adjust the tape path is described.

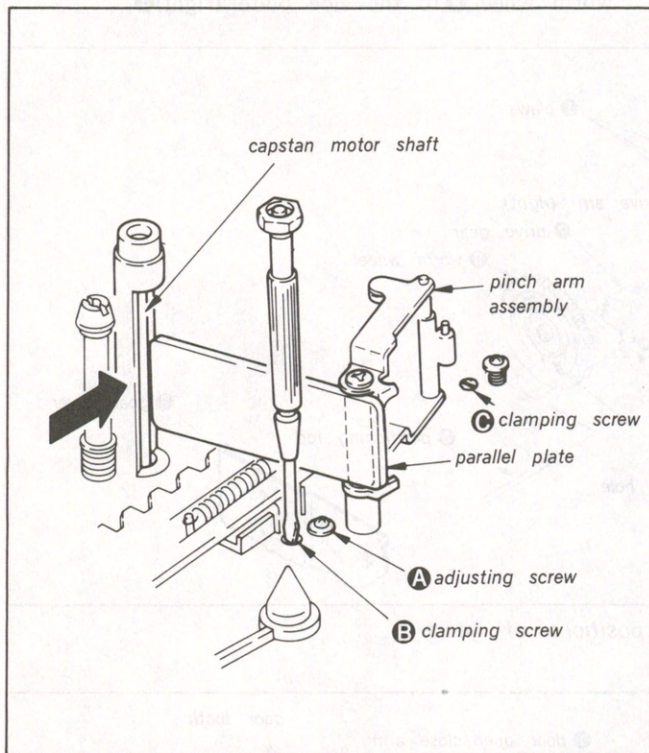


Fig. 7-24.

7-3-15. How to Pull the S Coil Sensor Out (Fig. 7-25)

- 1) Take off the spring **1**.
- 2) Take off the claw **2** in the direction of the arrow **A** to pull the S coil sensor **3** out.
- 3) Take the connector **4** off CN419 on the SS-80 board.

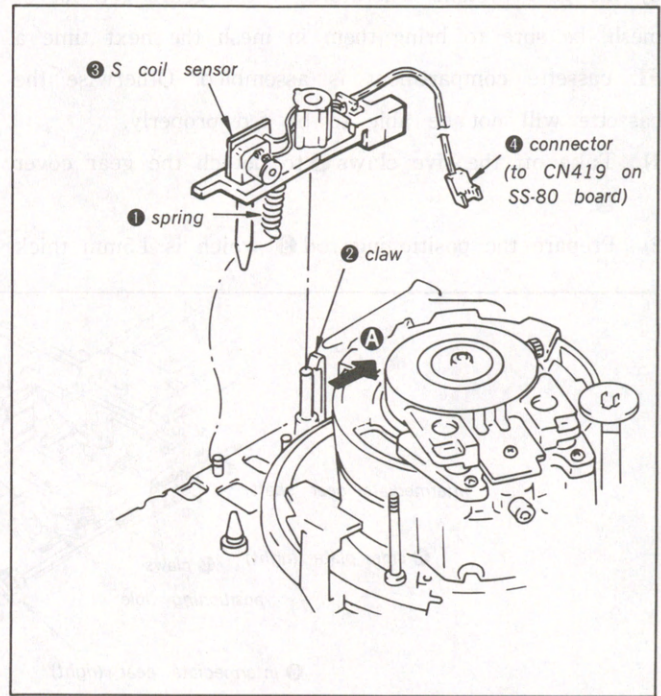


Fig. 7-25. How to pull the S coil sensor out.

7-3-16. Adjusting the Positions of the Gears of the FL Cassette Compartment Assembly (Fig. 7-26)

In the FL cassette compartment assembly, the cassette holder must always move in parallel to the mechanical chassis. And how much the holder moves is controlled by the gear system. Therefore, if the gears get out of mesh, be sure to bring them in mesh the next time a FL cassette compartment is assembled. Otherwise the cassette will not be able to be fed properly.

- 1) Take off the five claws **1** to detach the gear cover **2**.
- 2) Prepare the positioning rod **3** which is 1.5mm thick

and 200mm long.

- 3) Attached the drive arm (right) **5** to the side plate (right) **4**, and pass the positioning rod **3** through the side plate (right) **4**. Similarly, fix the drive gear (left) to the side plate (left).
- 4) Fix the intermediate gear (right) **6** to the side plate (right) (to which the intermediate gear shaft is attached), and pass the positioning rod **3** through the intermediate gear (right) **6**. Similarly, fix the intermediate gear (left) to and pass the positioning rod through the side plate (left).
- 5) In the same way, attach the drive gear **7** and the worm wheel **8** to the side plate (right) **4**.

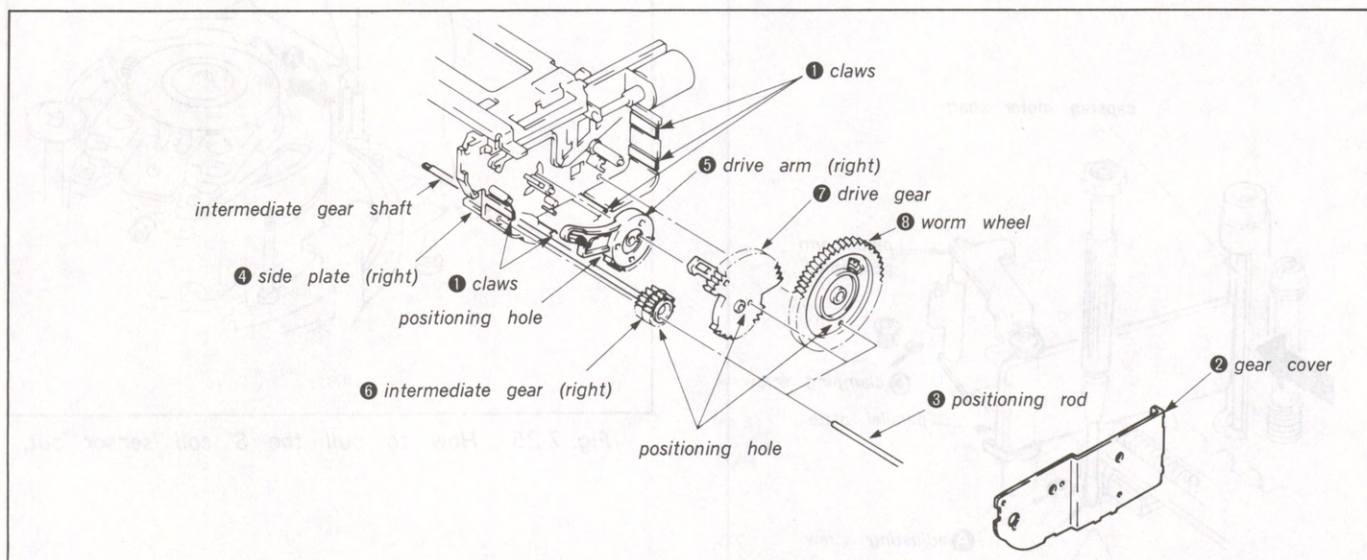


Fig. 7-26. Adjusting the positions of gears.

7-3-17. Checking and Adjusting the Cassette Door Assembly (Fig. 7-27)

[Checking Method]

Pull back the door open/close arm **1** in the direction of the arrow **A** to the full, and confirm that the upper door is at a right angle to the lower one.

[Adjusting Method]

Confirming that the door open/close arm **1** is pulled back to the full, close the upper in the direction of the arrow **B** so that it will be at a right angle with the lower one, and engage it with the gear.

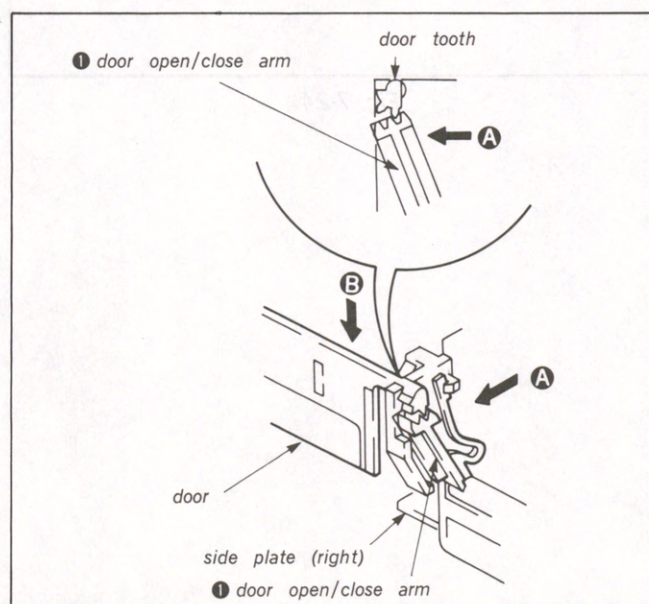


Fig. 7-27. Adjusting the position of the cassette door assembly.

7-3-18. Taking the No.2 Guide off (Fig. 7-28)

- 1) Unscrew the tapping screw (1×3) ①.
- 2) Unscrew the tapping screw (1.4×3) ②.
- 3) Take the No.2 guide assembly ③.

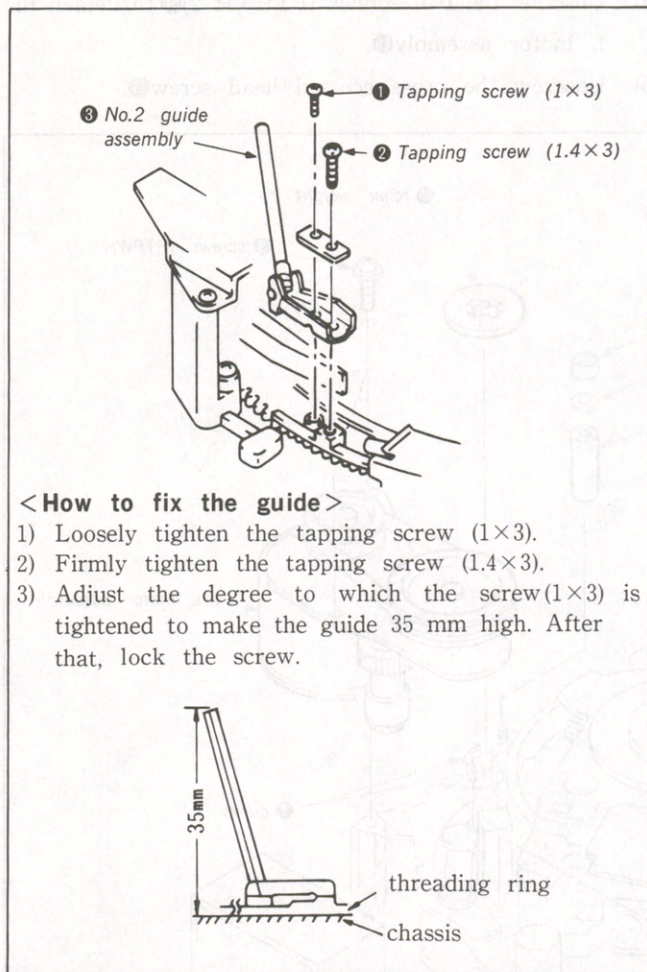


Fig. 7-28. Taking the No.2 guide off.

7-3-19. Taking the No.3 Guide off (Fig. 7-29)

- 1) Unscrew the tapping screw (1×3) ①.
- 2) Unscrew the tapping screw (1.4×3) ②.
- 3) Take the limiter spring ③ off.
- 4) Take the No.3 guide assembly ④ off.

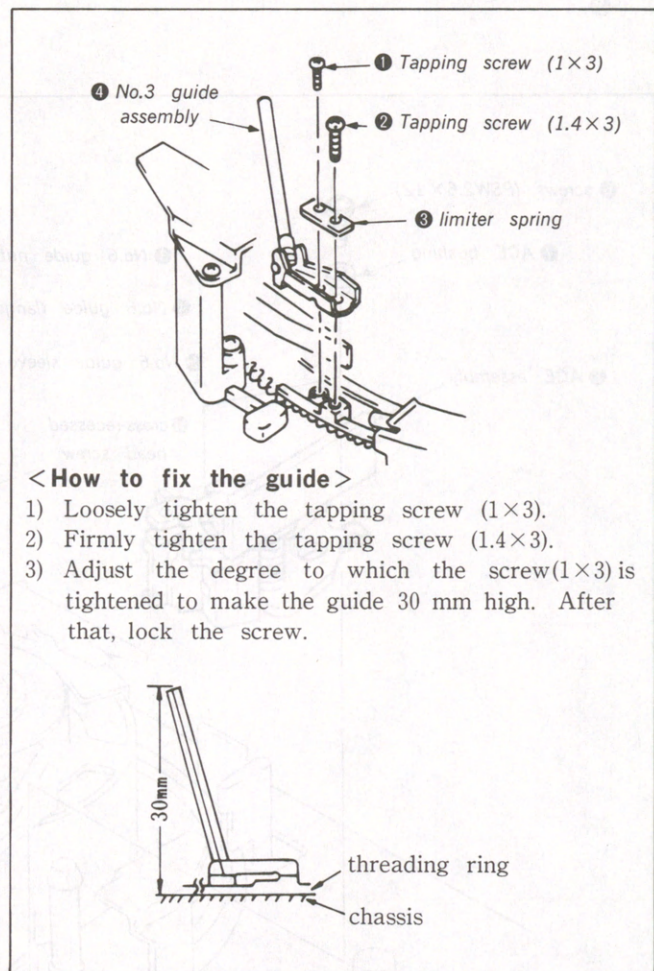


Fig. 7-29. Taking the No.3 guide off.

7-3-20. Preparation to Take off the S Threading Ring

[Detaching the ACE assembly, the No.6 guide and the loading motor] (Fig. 7-30)

1) Take off the two claws ① to detach the roller weight ②.

- 2) Detach the No.6 guide nut ③ to take off the No.6 guide flange ④ and the No.6 guide sleeve ⑤.
- 3) Unscrew the two screws (PSW2.6×12) ⑥ to detach the ACE busing ⑦ and the ACE assembly ⑧.
- 4) Unscrew the two screws (PTPWH 2) ⑨ to detach the L motor assembly ⑩.
- 5) Unscrew the cross-recessed head screw ⑪.

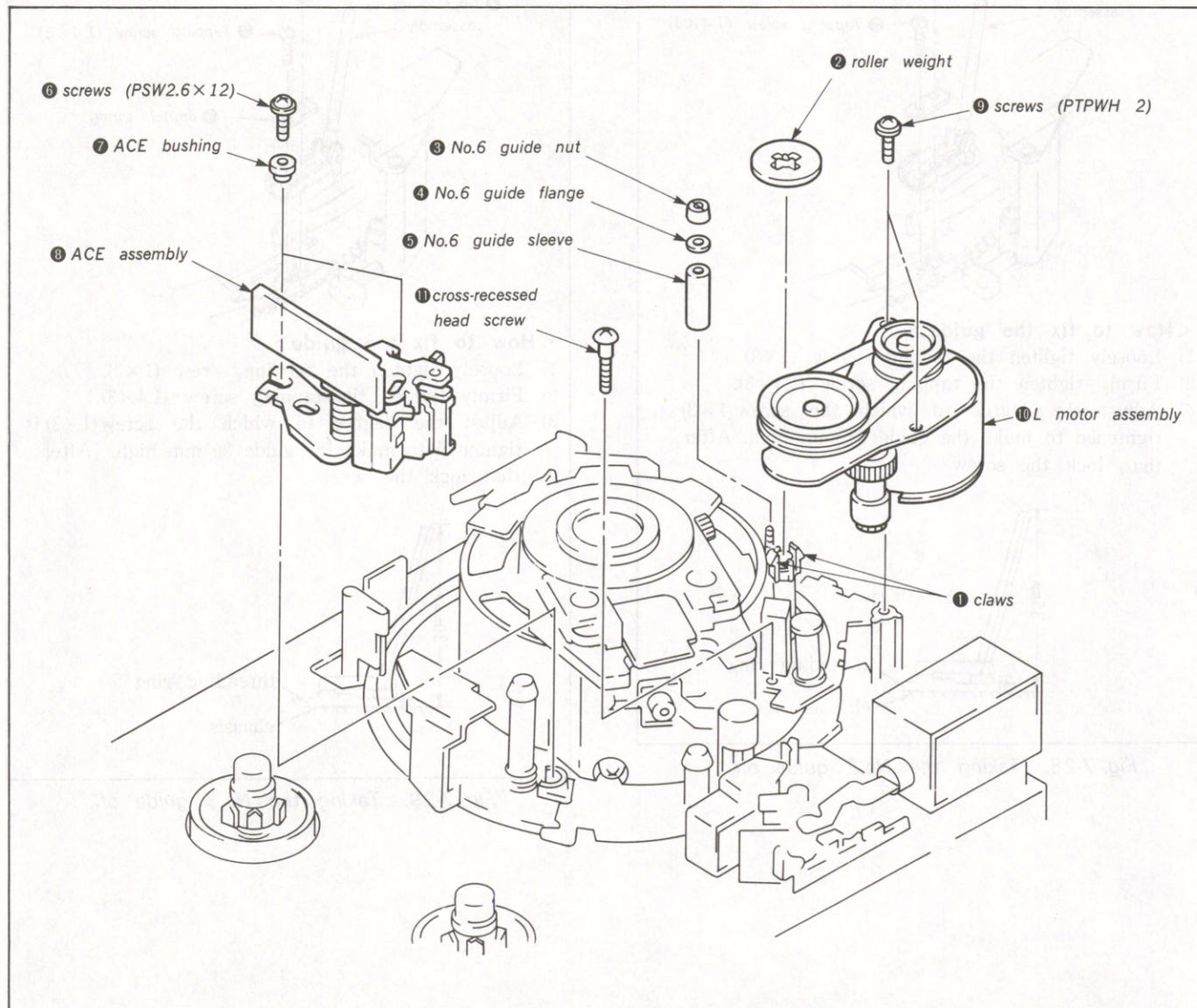


Fig. 7-30. Detaching the ACE assembly the FE head and the loading motor.

<Taking miscellaneous parts off> (Fig. 7-31)

Similarly to when replacing the drum assembly, measure the size of the gap between the upper drum and the adjusting plates (Fig. 7-18).

- 1) Unscrew the screws ① to take off the adjusting plates 3-1 ② and 2 ③.
- 2) Unscrew the two screws ④ to take off the tape holder assembly ⑤.
- 3) Unscrew the screw ⑥ to take off the guide plate ⑦.
- 4) Unscrew the two screws (PTPWH2×8) ⑧ and the screw (2.6×24) ⑨ to take off the shuttle guide 2 ⑩.

- 5) Unscrew the three screws (PTPWH2×8) ⑪ and the screw (2.6×24) ⑫. And take off the two claws holding the shuttle guide 1-YA ⑬ in place to detach the shuttle guide 1-YA ⑬ and all.
- 6) Take off the slant base assembly ⑭.
- 7) Take off the pin link liner plate ⑮.

Note: Once the guide plate is taken off, do not thread or unthread a tape with the shuttle guide attached.

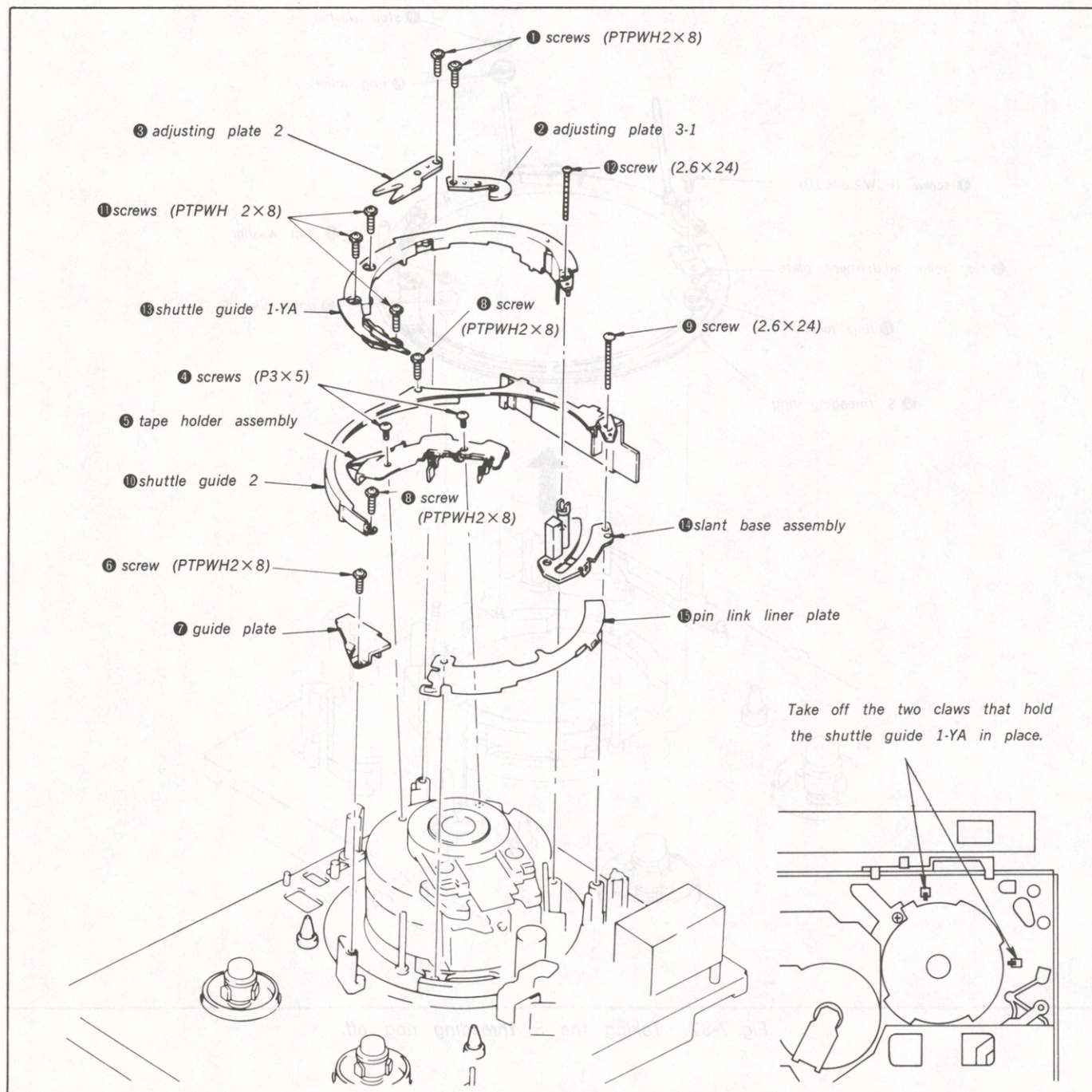


Fig. 7-31. Detaching the miscellaneous parts.

7-3-21. Taking the S Threading Ring off (Fig. 7-32)

- 1) Detach the two stop washers ❶ to take off the ring roller (B) ❷ and the ring roller ❸.
- 2) Unscrew the screw (PSW 2.6×10) ❹ to take off the ring roller adjustment plate ❺ and the ring roller ❻.
- 3) Take off the S threading ring ❼.

Note : Once a stop washer is taken off, do not use it again.

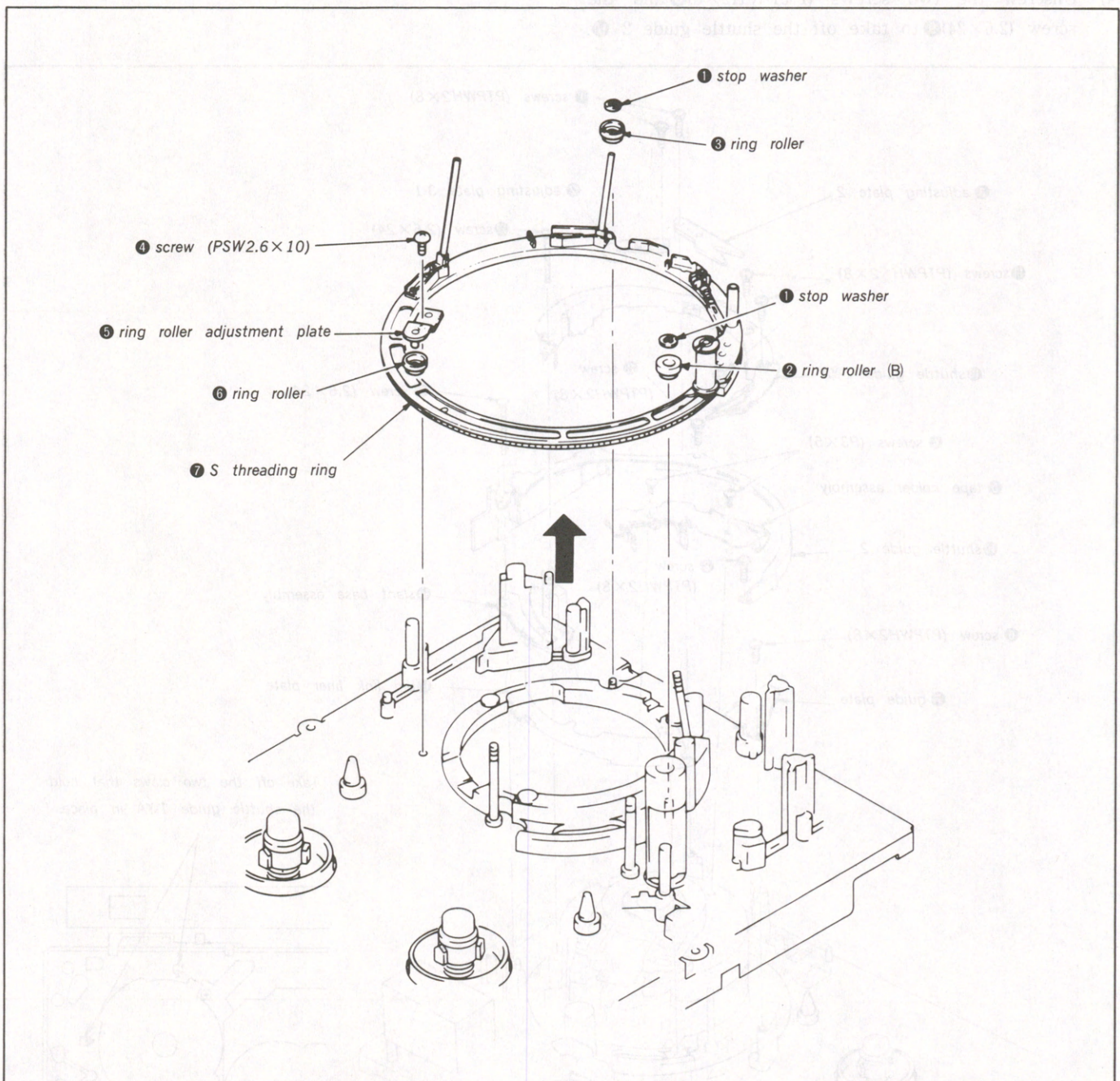


Fig. 7-32. Taking the S threading ring off.

7-3-22. Mounting the S Threading Ring and Adjusting its Position (Fig. 7-33)

- 1) Set the slider gear assembly ① in the unthreading completed position.
(Strike the slider gear assembly ① against the T slider stop mold ②.)
- 2) Under this condition, mount the S threading ring ③ in place, and fit the chassis hole ($\phi 3$) ④ in the part A to the S threading ring hole ($\phi 1.5$) ⑤ to engage the S threading ring ③ with the drive gear assembly ⑥.
- 3) Attach the ring roller (B) ⑦ and secure it using the stop washer ⑧.
- 4) Attach the ring roller ⑨ and secure it using the ring roller adjustment plate ⑩.

Note: After replacing or attaching a S threading ring, adjust the ACE assembly following the section where how to adjust the tape path is described.

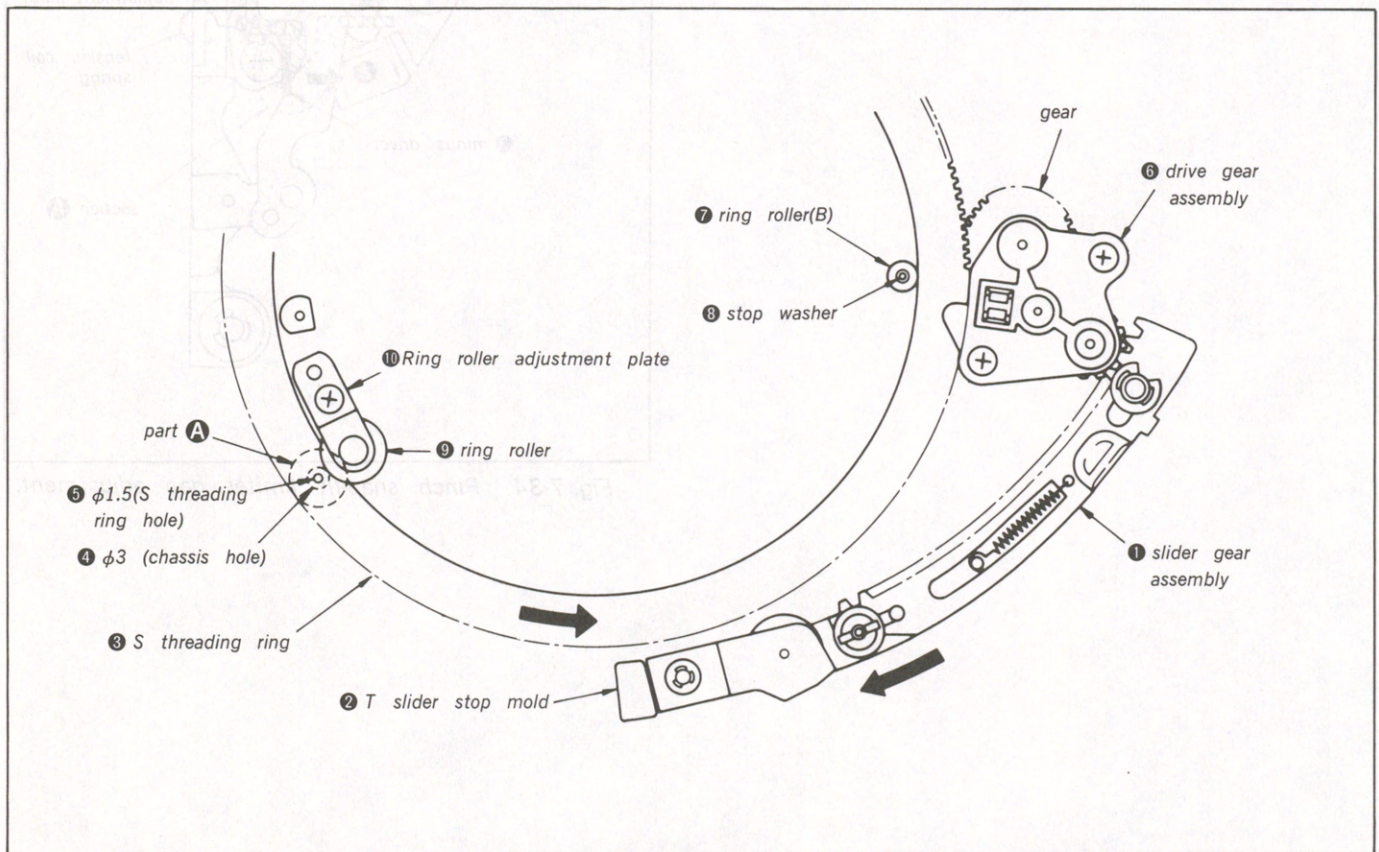


Fig. 7-33. S threading ring position adjustment.

7-3-23. Pinch Snap-fit Limiter Gap Check and Adjustment (Fig. 7-34)

[Checking Method]

- 1) Set in the threading completed condition.
- 2) Confirm if the size of the pinch snap-fit limiter gap t is more than 0.4mm and less than 0.6mm with the plunger pushed in to the full. If not, adjust the size as follows:

[Adjusting Method]

- 1) With the pinch plunger absorbed (pushed in to the full), loosen the adjustment screw ①.
- 2) Press the pinch limiter adjustment plate ③ in the direction of the arrow **a** using the minus driver ②, as shown in the section **A**, to fix the size t of the gap at more than 0.4mm and less than 0.6mm. Next, tighten the adjustment screw ① and lock it to fix everything in place.

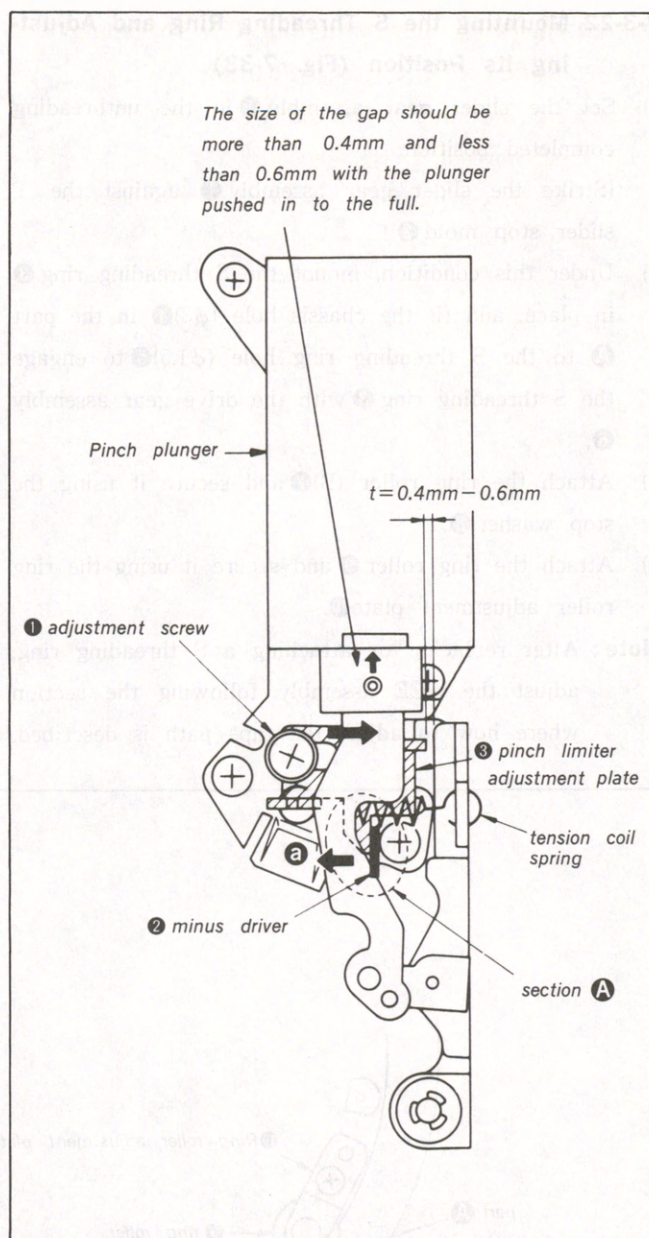


Fig. 7-34. Pinch snap-fit limiter gap adjustment.

7-3-24. Checking and Adjusting the Threading End Switch (TE Switch) Position

[Checking Method] (Fig. 7-35)

Turn the S threading ring manually, and check when the lock roller moves on upper one thirds of the stright line, part of the notch in the ring (the section A), the TE switch can be set to ON and to OFF.

If not (If the roller moves not only on it), adjust the threading end switch (TE switch) position as follows:

[Adjusting Method] (Fig. 7-35)

- 1) Set the lock roller in a point on upper one thirds of the stright line, the part of the notch in the ring, and loosen the TE switch stop screw to move the TE switch in the directions of the arrows. When the switch is set to ON, secure the screw.
- 2) After that, check that the threading end switch (TE switch) is in the position as mentioned above according to [checking method] .

[How to Detach the Lock Arm Assembly (TE Switch) and the S Coil Sensor Assembly] (Fig. 7-36)

- 1) Take the tension coil spring ① off the S coil sensor assembly ②, and detach the S coil sensor assembly ②.
- 2) Detach the lock arm assembly ③(TE switch) in the direction of the arrow A.

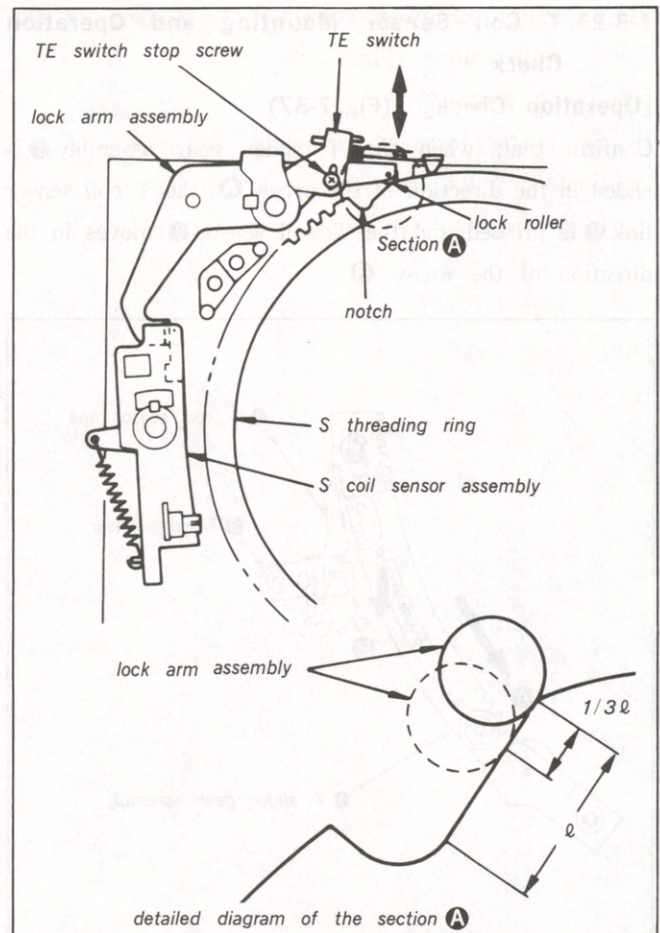


Fig. 7-35. Adjusting the TE switch position.

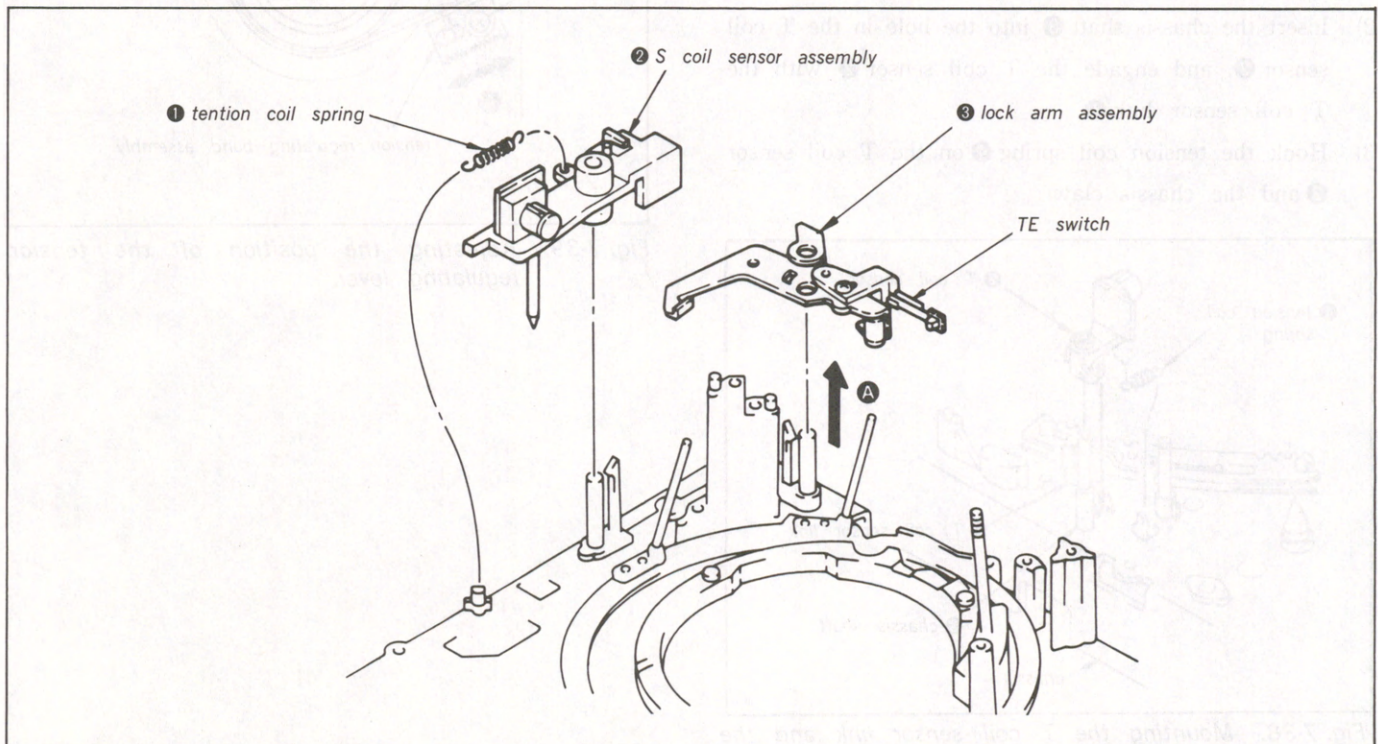


Fig. 7-36. Detaching the lock arm assembly (TE switch) and the S coil sensor assembly.

7-3-25. T Coil Sensor Mounting and Operation Check

[Operation Check] (Fig. 7-37)

Confirm that, when the T slider gear assembly ❶ is slid in the direction of the arrow A, the T coil sensor link ❷ is pressed and the T coil sensor ❸ moves in the direction of the arrow B.

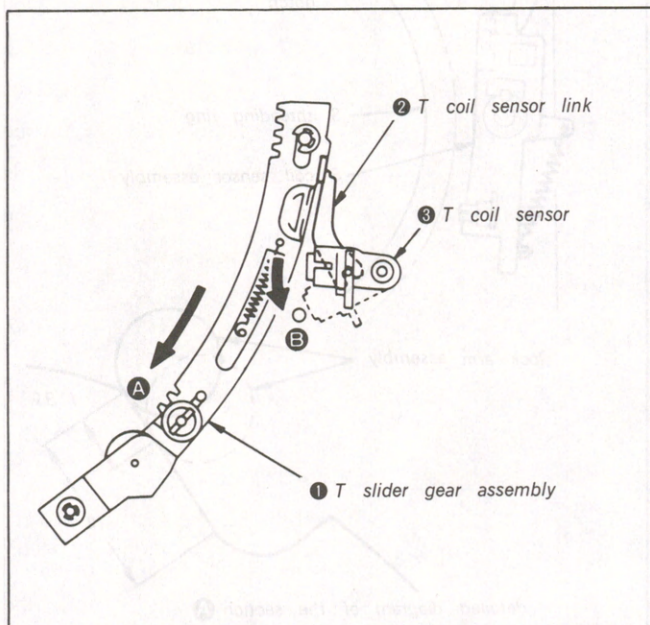


Fig. 7-37. T coil sensor operation check.

[Mounting Method] (Fig. 7-38)

- 1) Set the T coil sensor link ❶ in the specified position.
- 2) Insert the chassis shaft ❸ into the hole in the T coil sensor ❷, and engage the T coil sensor ❷ with the T coil sensor link ❶.
- 3) Hook the tension coil spring ❹ on the T coil sensor ❷ and the chassis claw.

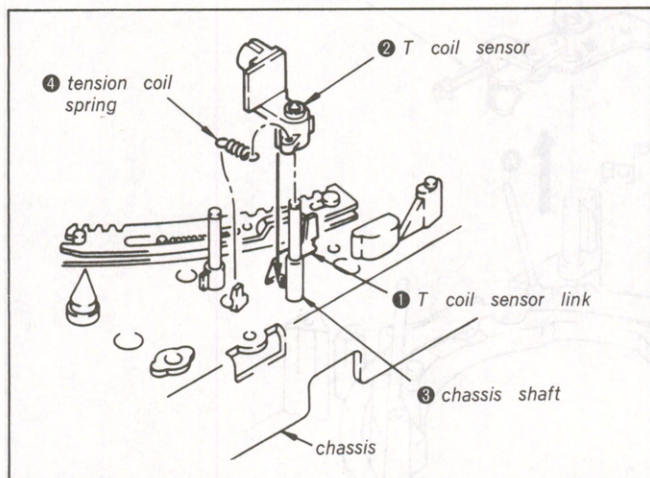


Fig. 7-38. Mounting the T coil sensor link and the T coil sensor.

7-3-26. Adjusting the Position of the Tension Regulating Lever (Fig. 7-39)

- 1) Put this unit in playback mode.
- 2) Loosen the adjusting screw so that the tape guide pin of the tension regulating lever assembly comes inside of the outer circumference of the shuttle guide 1-YA, as shown in Fig. 7-39. And adjust the position of the tension regulating lever by moving the assembly in the directions of the arrows A.
- 3) After the adjustment, tighten the screw, while seeing to it that the tension regulating band assembly does not move.

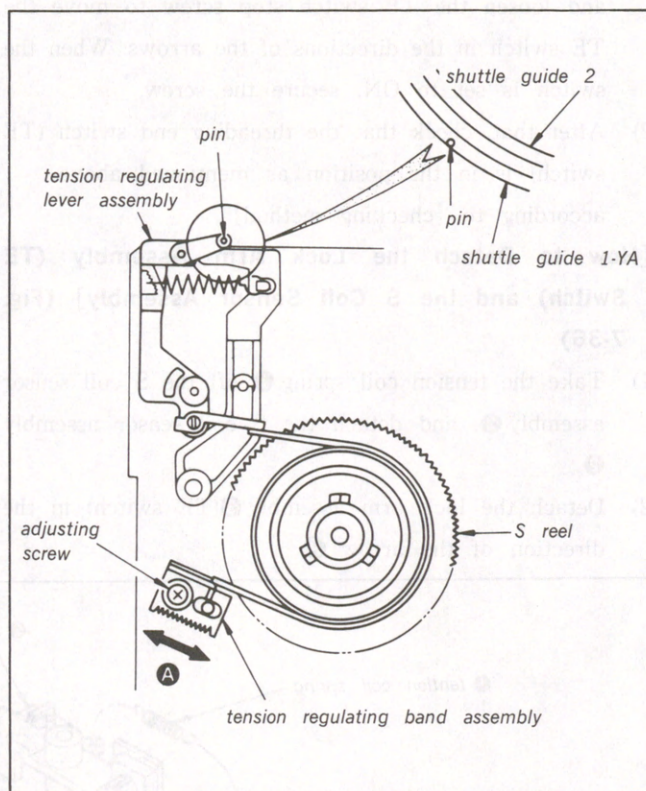


Fig. 7-39. Adjusting the position of the tension regulating lever.

7-3-27. Adjusting the Forward and the Back Tension (Fig. 7-40)

First, measure the forward and the back tension as follows, using the torque cassette (SL-0003C):

[Measuring Method]

- 1) Insert the torque cassette and put this unit in playback mode.
- 2) Read the tension which the meter on the S reel's side indicates, when the pointer makes about one round.

Standard: $44\text{g}\cdot\text{cm} \pm 4\text{g}\cdot\text{cm}$

Notes :

- i) While measuring the tension, keep this unit horizontal.
- ii) After the measurement, a tape will sometimes slacken when the stop button is pressed. In such a case, set this unit in forward mode once to tighten the tape, and then eject it.

[Adjusting Method]

Move the tension coil, hooked on the tension regulating lever assembly, in the direction of the arrow **A** so that a measured value should fall within the range of the standard value ($44\text{g}\cdot\text{cm} \pm 4\text{g}\cdot\text{cm}$).

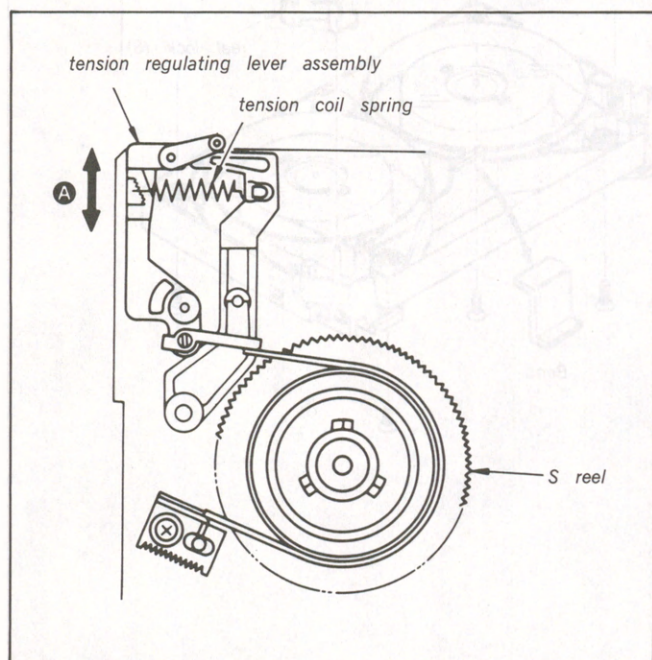


Fig. 7-40. Adjusting the back tension.

7-3-28. Measuring the Reverse Torque

Measure the reverse torque as follows, using the torque cassette (SL-0003C):

[Measuring Method]

- 1) Insert the torque cassette (SL-0003C) in which a telecast is already recorded in β II mode, and set this unit in $\times 1$ reverse mode.
- 2) Read the torque which the meter on the S reel's side indicates, when the pointer makes about one round. Standard: 90 to $160\text{g}\cdot\text{cm}$ (The torque cassette is graduated up to $150\text{g}\cdot\text{cm}$, so roughly read the torque exceeding $150\text{g}\cdot\text{cm}$.) When the measured torque is out of the range of the standard value, replace the S reel table assembly with a new one.

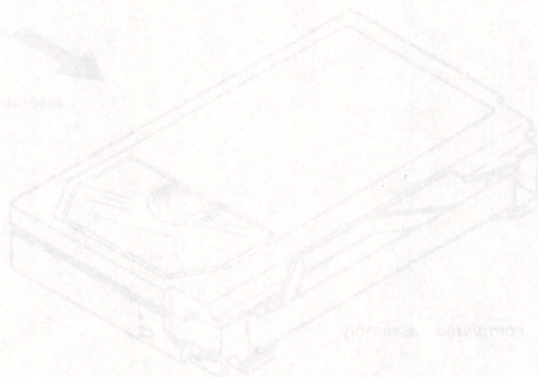
7-3-29. Measuring The Forward Torque

Measure the forward torque as follows, using the torque cassette (SL-0003C).

[Measuring Method]

- 1) Insert the torque cassette (SL-0003C) and start recording a telecast in β II mode.
- 2) Read the torque which the meter on the T reel's side indicates, when the pointer makes about one round. Standard: 45 to $90\text{g}\cdot\text{cm}$

When the measured torque is out of the range of the standard value, replace the T reel table assembly with a new one.



7-4. TAPE PATH ADJUSTMENT

This adjustment has a great effect on the picture quality in each mode and on the changeability of tapes, so it should be made with the possible care.

7-4-1. Preparation for adjustment

7-4-2. Entrance side tracking adjustment

7-4-3. Exit side tracking adjustment

7-4-4. Adjustments to be made after the ACE assembly is replaced

7-4-5. Adjustments to be made after the capstan motor is replaced

7-4-6. Checking the tape feed rate after adjusting the tape path

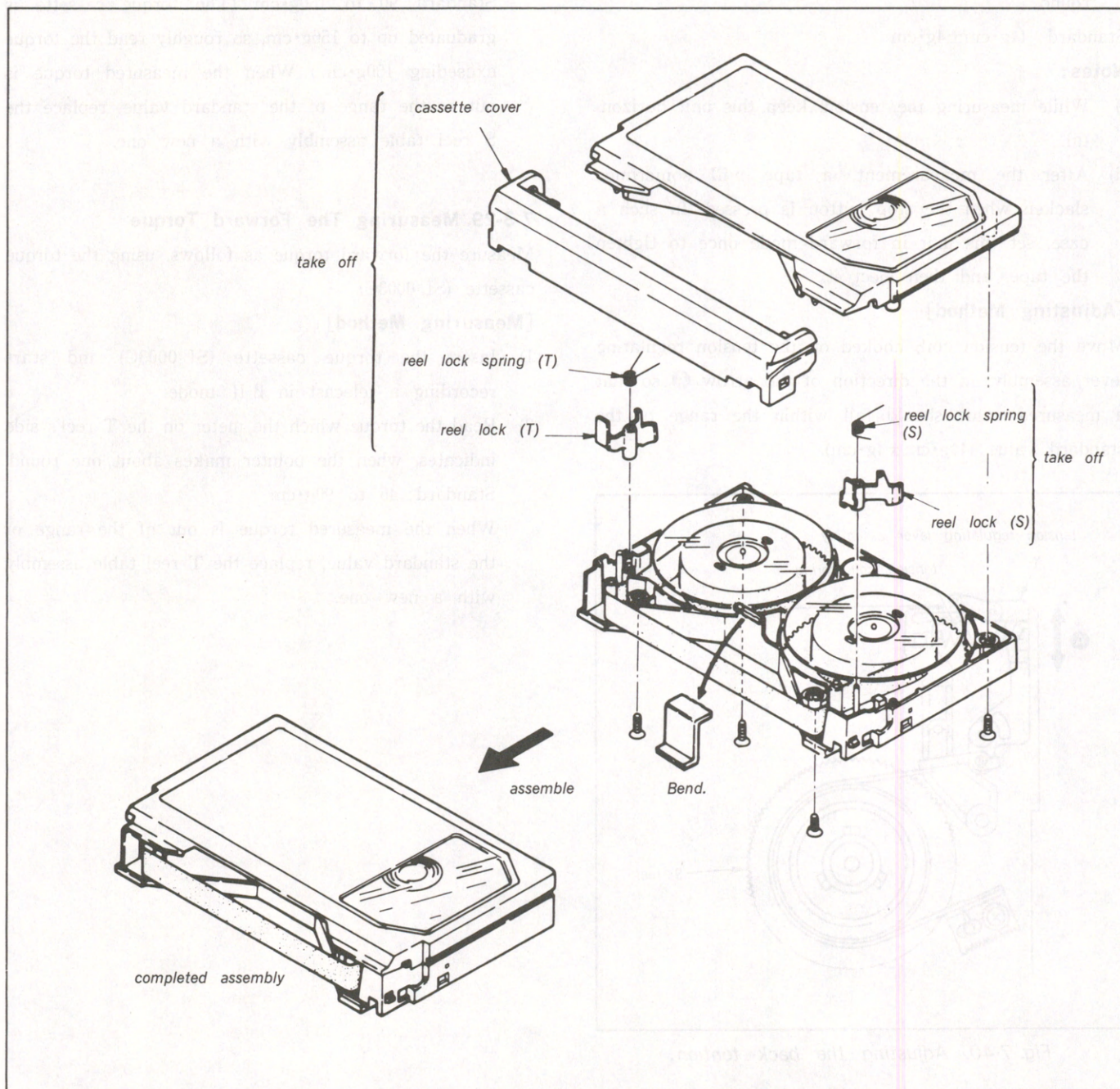


Fig. 7-41.

7-4-1. Preparation for Adjustment

- 1) Take off the alignment tape cassette cover, as shown in Fig. 7-41.
- 2) Clean the surfaces and the parts on which a tape travels (tape guide, drum tape traveling surface, capstan shaft, pinch roller and ACE, FE head surface), using a chamois cloth dipped in methanol.
- 3) Connect the two pins with the oscilloscope as follows:
 With 1CH: Pin ③ of CN003 (RP-51 board)
 With external trigger: pin ① of CN003 (RP-51 board)
 (Fig. 7-42)

- 4) Play back the signal of 1MHz on the tracking section of the alignment tape.
- 5) Confirm that the oscilloscope RF output waveform is even and that its amplitude is greatest. (The amplitude should increase or decrease with the waveform held as it is, when the tracking knob is turned right or left.)

And, when the amplitude A of the waveform in Fig. 7-43 is fixed at two thirds of its maximum, the deviation (relative to the whole area from the entrance to the exit) should satisfy the specifications in Fig. 7-43.

- 6) When the entrance waveform cannot be made flat as shown in Fig. 7-44 (a), control rectify the waveform following "7-4-2 Entrance side tracking adjustment". On the other hand, when the exit waveform cannot be made flat as shown in Fig. 7-44 (b), rectify it following "7-4-3 Exit side tracking adjustment".

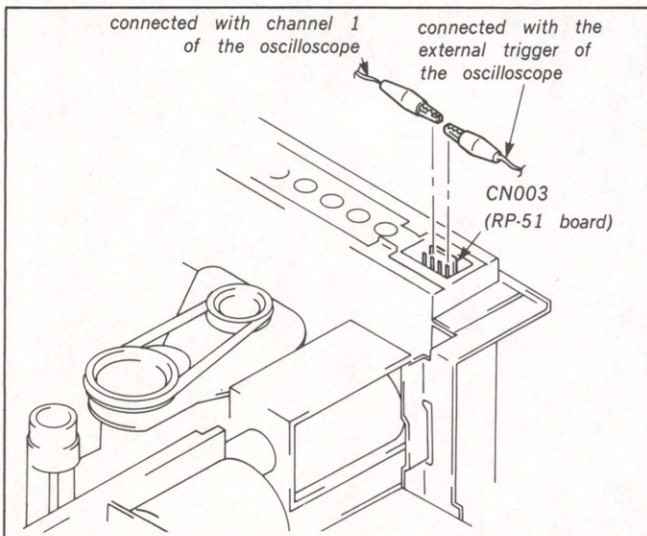


Fig. 7-42.

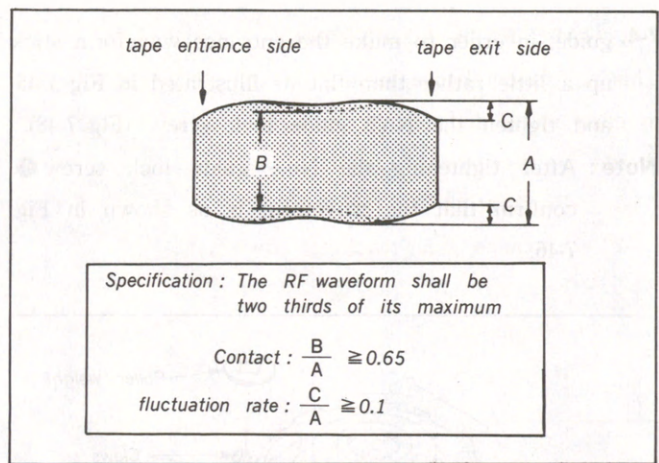


Fig. 7-43.

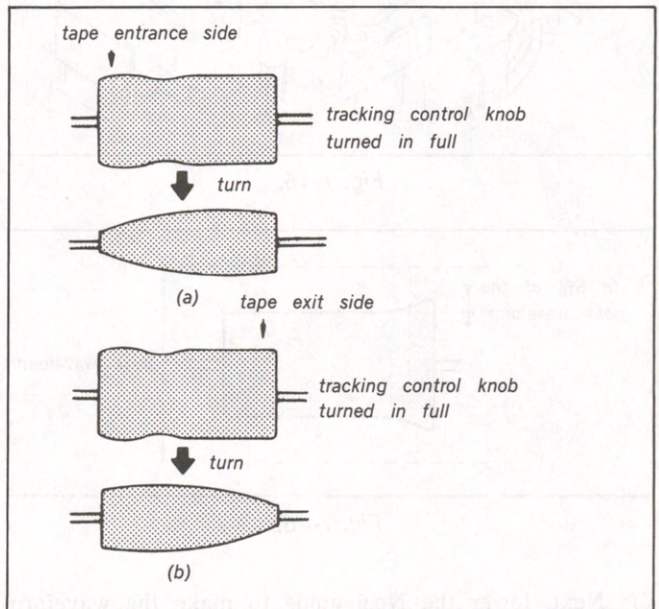


Fig. 7-44.

7-4-2. Entrance side tracking adjustment

Note: Whenever the entrance side tracking adjustment is made, adjust the exit side tracking as well. Various tape guides and the adjusting positions are shown in Fig. 7-47.

- 1) Referring to Fig. 7-45, take off the two claws to detach the roller weight.

Note: After adjusting the entrance side tracking completely, attach the roller weight to check the radio frequency waveform again.

- 2) Turn the No.6 guide counterclockwise, and release tapes from the control of the No.6 guide upper flange.
- 3) Turn the tracking control knob to fix the amplitude of the waveform at sixty percent of its maximum.

- 4) Loosen No.5 guide lock screw ❶ and turn the No.5 guide, in order to make the entrance waveform stick up a little rather than flat as illustrated in Fig 7-45, and tighten the No.5 guide lock screw (Fig.7-48).

Note: After tightening the No.5 guide lock screw ❶, confirm that the waveform is as shown in Fig. 7-46.

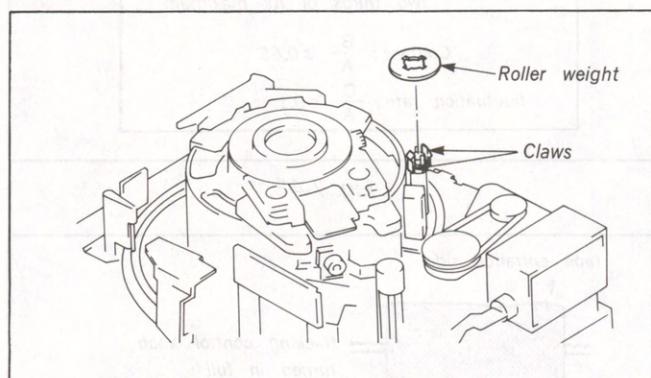


Fig. 7-45.

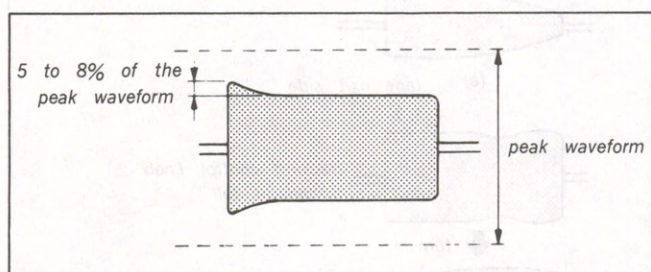


Fig. 7-46.

- 5) Next, lower the No.6 guide to make the waveform flat.
- 6) Press down the tape between the No.4 and the No. 5 guides by a finger to lower the entrance side radio frequency waveform, and confirm that the waveform returns to what it was before.
- 7) Under this condition, confirm if the clearance and the curl of a tape under the No.5 guide may be found. If at least one of them may be, get rid of it or them as mentioned later.

Note: The tape tension between the No.3 and the No. 4 guides and between the No.4 and the No.5 guides must be balanced. If it is not, adjust the tilt of the No.3 and the No.5 guides.

Note: If such a waveform as shown in Fig.7-46, if it takes the waveform much time to turn flat as before with the tape pressed down at the entrance, or if it does not turn so, adjust it as follows.

[When the Waveform Entrance Output will not Rise]

- 1) Confirm if the up-down tension of the tape between the No.3 and the No.4 guides and between the No. 4 and the No.5 guides are balanced. If not, adjust the tilt of the No.3 and the No.5 guides.

Note: See to it that the No.4 guide lower flange does not float.

- 2) Raise the No.4 guide lower flange to raise the entrance output.

Note: The No.4 guide lower flange may be pushed up to 0.4mm above the bottom (rotary angle: within 360°)

Note: When the entrance output cannot be raised in 2), turn the No.5 guide tilt adjusting screw a little to the left.

[When the Waveform Entrance Output will not Fall]

- 1) Detach the No.3 guide adjusting plate 3-1 from the drum, and tighten the screw ❷ just before the down tension slackens.
- 2) If the tape is in contact with the No.4 guide lower flange, lower the flange. If the tape is floating over the flange, adjust the tilt of the No.5 guide to keep it from floating.

[When the Tape is Floating Over the No.5 Guide]

Turn the No.4 guide counterclockwise to run the tape on it and to keep the tape from floating over the No. 5 guide.

Note: Confirm that excessive curl cannot be found below the No.4 guide.



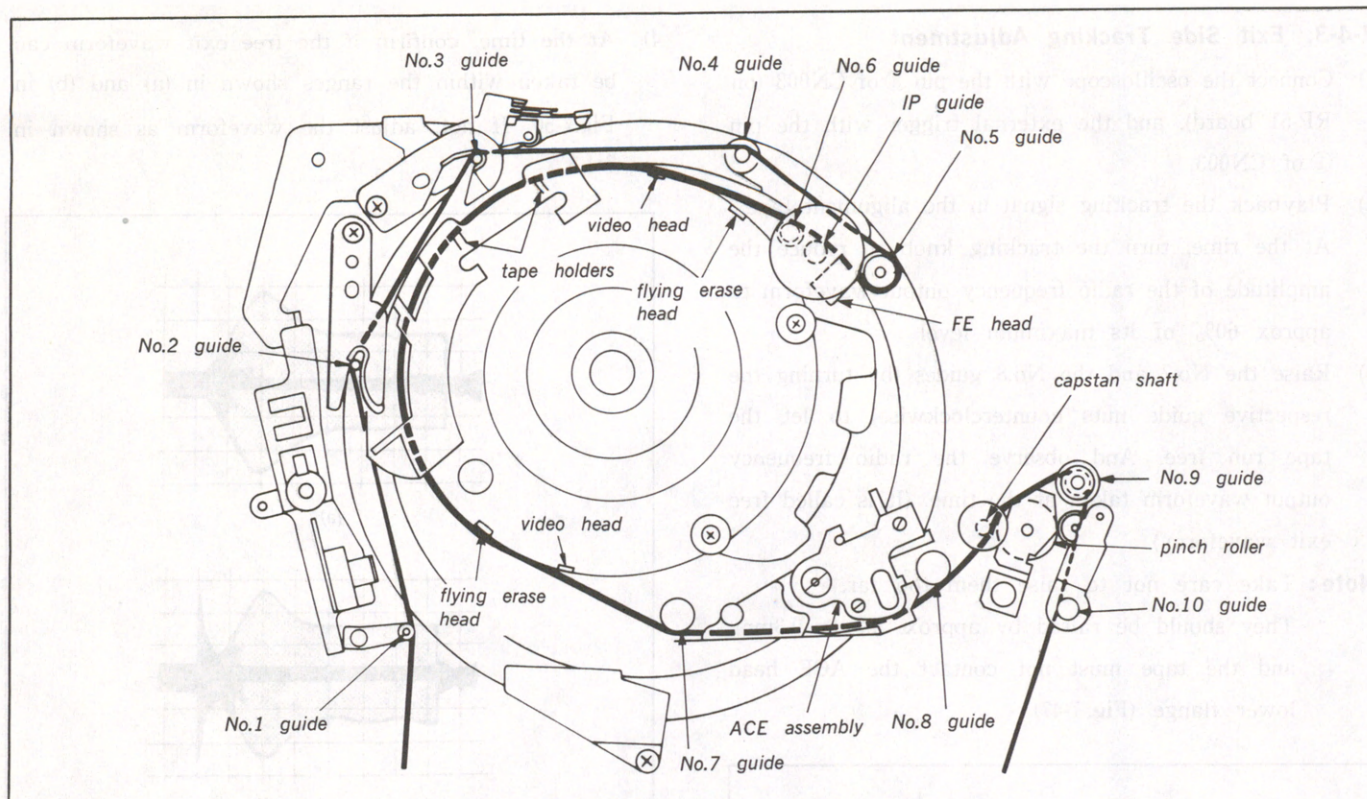


Fig. 7-47. Tape guide arrangement.

[When a Curl can be Found]

- 1) If there is a clearance below the No.4 guide:
Tip the No.3 guide adjusting plate 3-1 to the outside until the time just before the down tension of the tape slackens.
- 2) If there is no clearance below the No.4 guide (If a curl can be found below the guide):
 - i) Confirm if the guide is too much raised up. If so, turn the adjusting plate clockwise to lower the guide.
 - ii) When the curl still cannot be corrected, tighten the No.5 guide tilt adjusting screw clockwise until it is corrected.

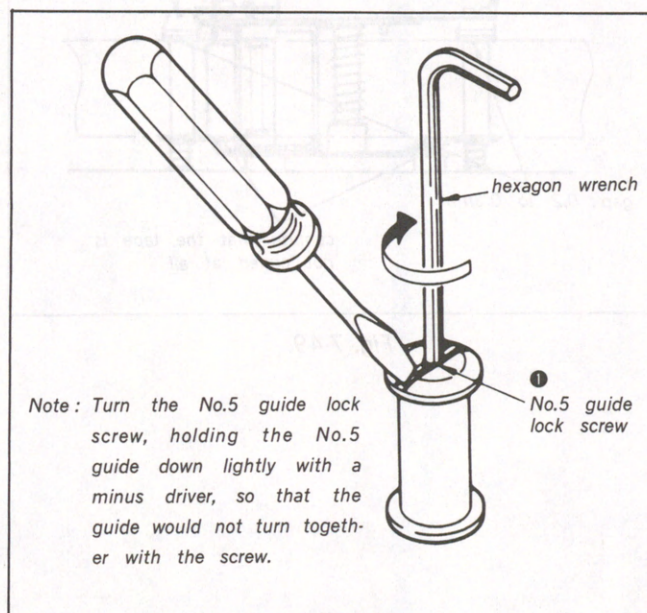


Fig. 7-48.

7-4-3. Exit Side Tracking Adjustment

- 1) Connect the oscilloscope with the pin ③ of CN003 (on RP-51 board), and the external trigger with the pin ① of CN003.
- 2) Playback the tracking signal in the alignment tape. At the time, turn the tracking knob to reduce the amplitude of the radio frequency output waveform to approx 60% of its maximum level.
- 3) Raise the No.7 and the No.8 guides (by turning the respective guide nuts counterclockwise) to let the tape run free. And observe the radio frequency output waveform taken at the time. (It is called free exit waveform.)

Note: Take care not to raise them too far.

They should be raised by approx. 0.2 to 0.3mm, and the tape must not contact the ACE head lower flange (Fig. 7-47)

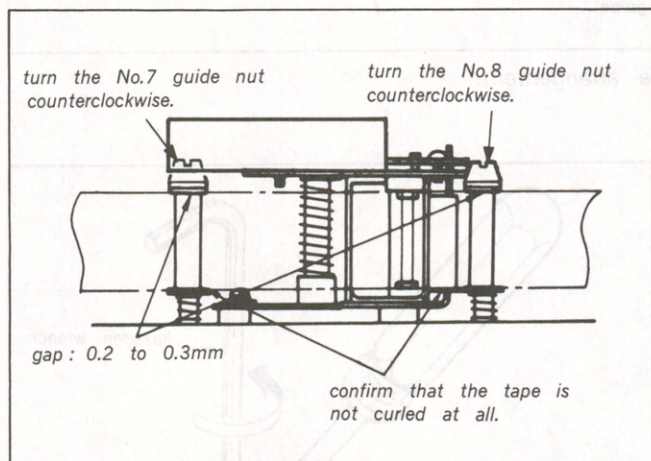


Fig. 7-49.

- 4) At the time, confirm if the free exit waveform can be taken within the ranges shown in (a) and (b) in Fig. 7-50. If not, adjust the waveform as shown in 7-4-5.

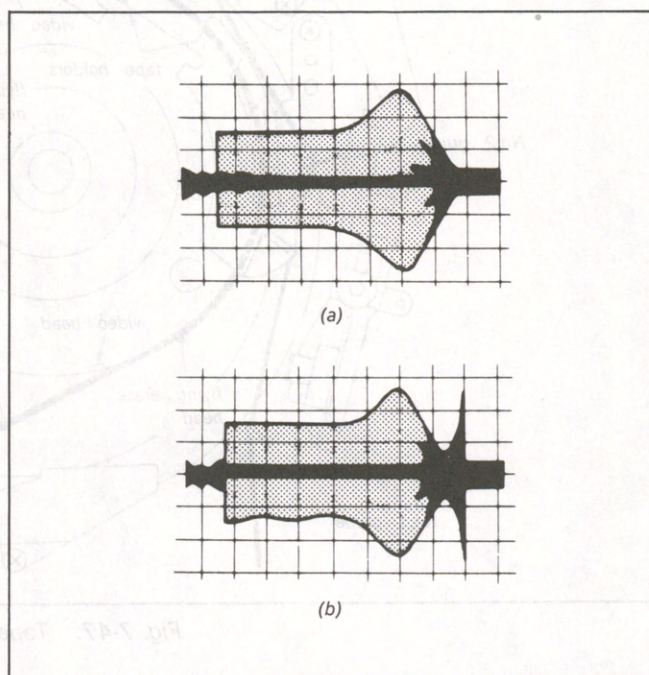


Fig. 7-50.

- 5) Flatten the waveform using the No.7 guide, and let the tape run along the No.8 guide. (Lower the No. 7 guide until the time just before the waveform changes and until the curl of the tape is removed.) At the time, the exit waveform sometimes floats a little. In such a case, lower the No.7 guide to flatten the waveform, and let the tape run along the No. 8 guide.
- 6) Confirm that the tape is not curled on the No.7 and the No.8 guides in forward mode.
- 7) Confirm if the No.8 guide floats and if the tape is curled on the guide in reverse mode. If it does or if it is, adjust the guides using the No.9 guide. After that, lock the guide not with the screw.

7-4-4. Adjustments to be Made After the ACE Assembly is Replaced.

When the ACE assembly is detached or replaced, make the following adjustments:

1. Adjusting the exit side tracking
2. Adjusting the position of the CTL head (ACE assembly)
3. Adjusting the azimuth of the audio head (ACE assembly)
4. Adjusting the height of the audio head (ACE assembly)

(1) Adjusting the Exit Side Tracking

- 1) Set the parallel plate (SL-0657 in the table of tools and fixtures required for servicing) as shown in Fig. 7-51, and turn the tilt adjusting screw ❶ to adjust the audio head vertically.

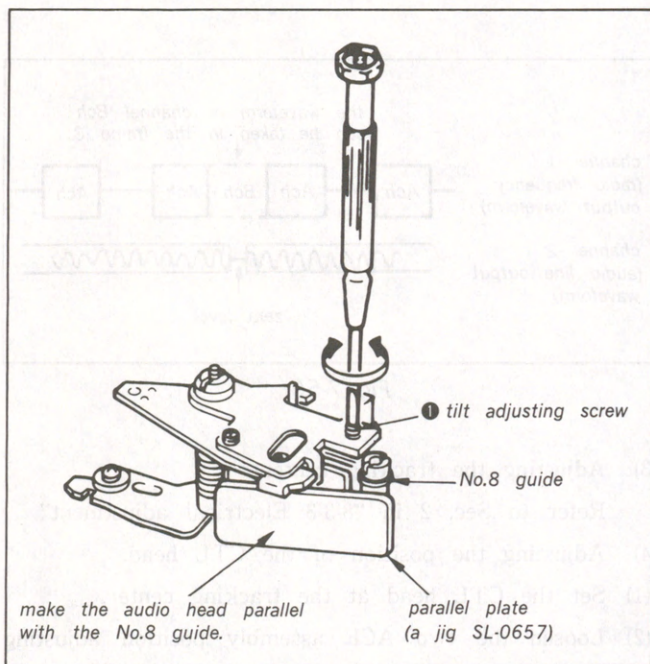


Fig. 7-51.

- 2) Connect the oscilloscope with the pin ❸ of CN003 (on RP-51 board), and the external trigger with the pin ❶ of CN003.
- 3) Playback the tracking signal in the alignment tape. At the time, turn the tracking knob to reduce the amplitude of the radio frequency output waveform to approx. 60% of its maximum level.
- 4) Raise the No.7 and the No.8 guides (by turning the respective guide nuts counterclockwise) to let the tape run free. And observe the radio frequency output waveform (free exit waveform) taken at the time.

Note: The guides should not be raised too far. Raise them by 0.2 to 0.3mm, seeing to it that the tape does not contact the ACE head lower flange.

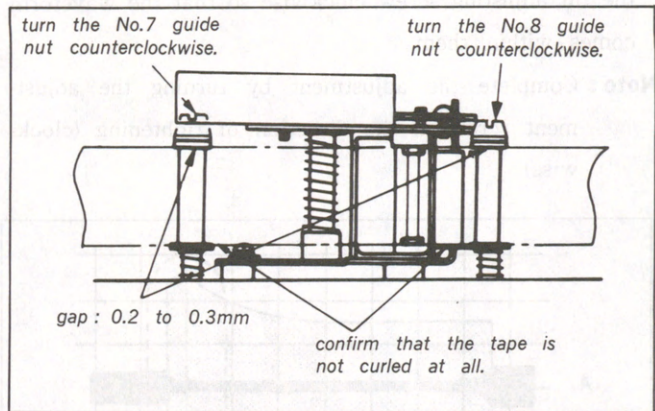


Fig. 7-52.

- 5) At the time, confirm if the free exit waveform can be taken within the ranges shown in (a) and (b) in Fig. 7-53.

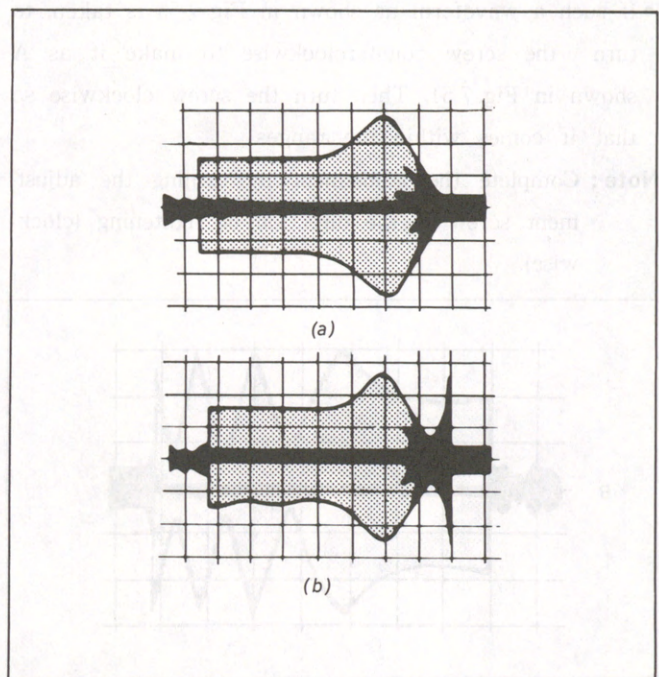


Fig. 7-53.

[When the Waveform cannot be Taken within the Ranges:]

- If such a waveform as shown in Fig. 7-54 is taken, turn the tilt adjusting screw clockwise so that the waveform comes within them.

Note: Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

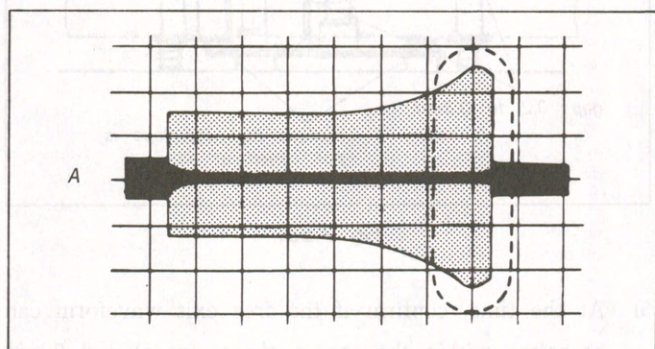


Fig. 7-54.

- If such a waveform as shown in Fig. 7-55 is taken, to turn the screw counterclockwise to make it as A shown in Fig. 7-54. Then turn the screw clockwise so that it comes within the ranges.

Note: Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

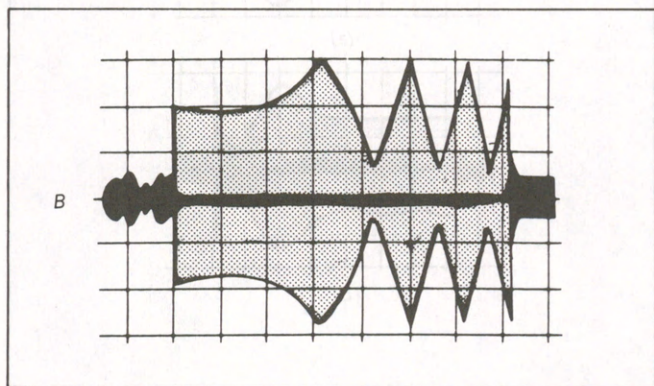


Fig. 7-55.

- 6) Flatten the waveform by turning the No.7 guide nut, and turn the No.8 guide nut clockwise to let the tape run along the No.8 guide. (Lower the guide until the time just before the tape is curled on the No.8 guide flange.)
- 7) When the radio frequency exit side output waveform floats, lower the No.7 and the No.8 guides again to flatten the waveform.

(2) Adjusting the Position of the CTL Head (ACE Assembly)

[Connection]

Oscilloscope

With 1CH : pin ③ of CN003 (on RP-51 board)

With 2CH : Audio line output terminal

With external trigger : pin ① of CN003 (on RP-51 board)

[Adjusting Method]

- 1) Playback the tracking signal in the alignment tape.
 - 2) Confirm if the amplitude of the radio frequency output waveform is greatest, and if the zero level position of the audio signal can be found in the B-CH waveform at the tracking center.
- If it is not, or if it cannot, take the following step 3).

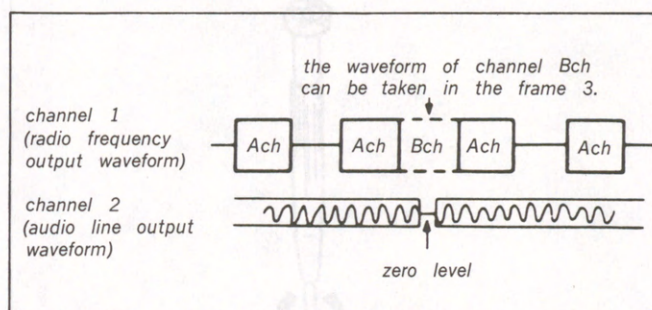


Fig. 7-56.

- 3) Adjusting the tracking center.
Refer to Sec. 2 in "8-3-3 Electrical adjustment".
- 4) Adjusting the position of the CTL head.
 - (1) Set the CTL head at the tracking center.
 - (2) Loosen the two ACE assembly position adjusting screws, and slide the assembly using a minus driver, etc. so that the amplitude of the radio frequency output waveform should run up to its maximum. (Fig. 7-57)
 - (3) Playback the color bar signal for the alignment tape to check the quality of pictures.
 - (4) Tighten the position adjusting screw and lock it.

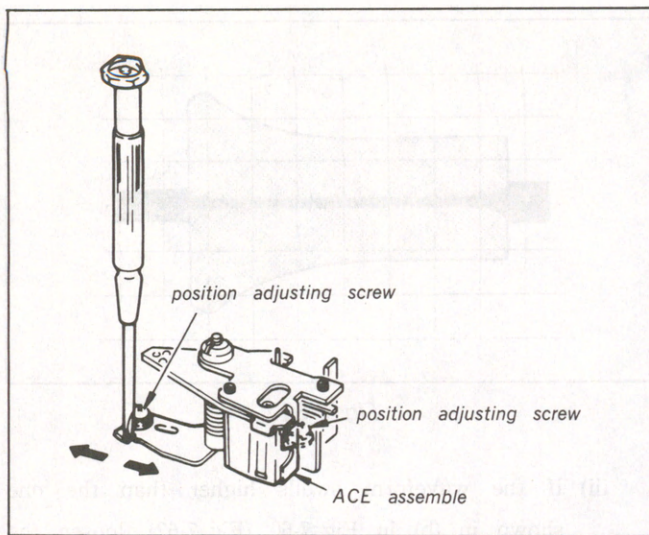


Fig. 7-57.

- (3) Adjusting the azimuth of the audio head (ACE assembly)

[Connection]

With 1CH on the oscilloscope: Audio line output terminal

[Adjusting Method]

- 1) Playback the audio signal of 5kHz and -30dB (radio frequency sweep) for the alignment tape.
- 2) Turn the azimuth adjusting screw to raise the output level (the value the level meter indicates) to its maximum.

Note: Complete the adjustment by turning the azimuth adjust screw in the direction of tightening (clockwise).

- 3) Finally lock the azimuth adjusting screw.

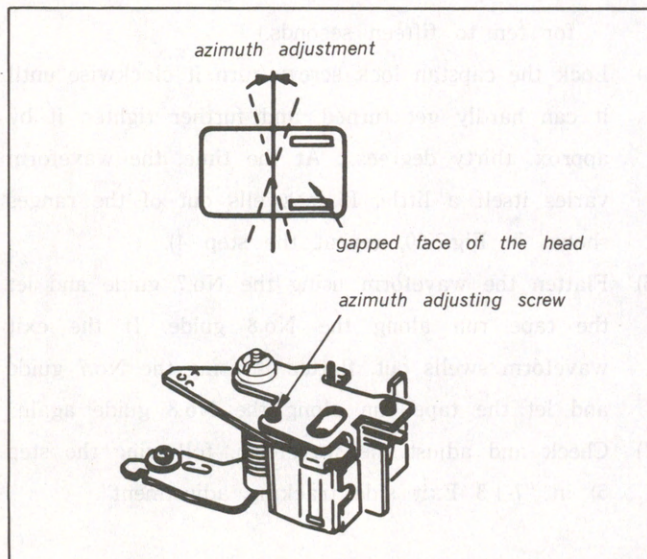


Fig. 7-58.

- (4) Adjusting the height of the audio head (ACE assembly)

[Condition]

Finish adjusting the tracking at the entrance before adjusting the height.

[Connection]

With 1CH on the oscilloscope: Audio line output terminal

[Adjusting Method]

- 1) Playback the audio signal of 5kHz and -30dB (radio frequency sweep) for the alignment tape.
- 2) Turn the height adjustment screw to raise the amplitude of the audio line output waveform (5kHz) to its maximum.

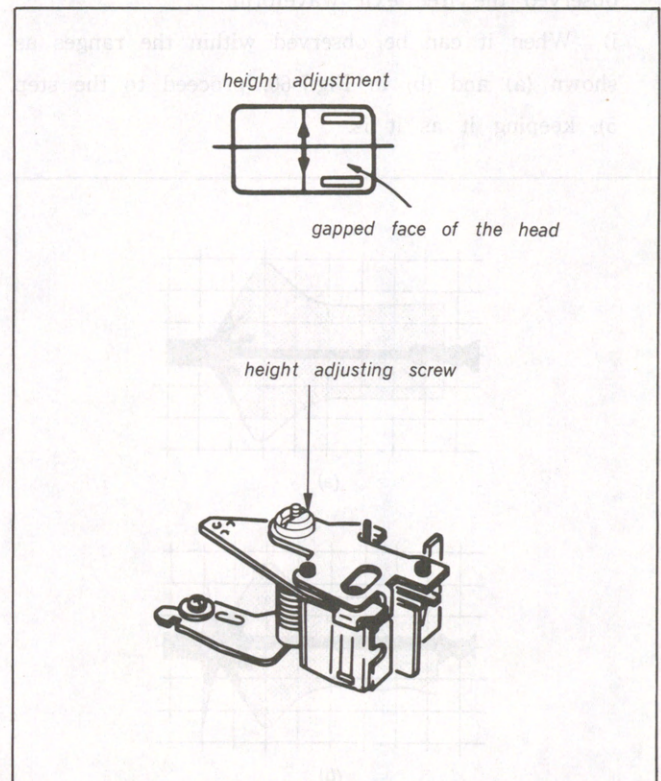


Fig. 7-59.

7-4-5. Adjustments to be Made After the Capstan Motor is Replaced

- 1) For how to detach and replace the capstan motor, refer to "7-3-13 How to detach the capstan motor".
- 2) Play back the tracking signal of the alignment tape (KR-1G)

Connect the two pins with the oscilloscope as follows:

With 1CH: pin ③ of CN003 (on RP-51 board)

With 2CH: pin ① of CN003 (on RP-51 board)

- 3) Turn the tracking control knob clockwise to reduce the amplitude of the radio frequency output waveform to 60% of its maximum.
- 4) Let the No.7 and the No.8 guide float a little to observed the free exit waveform.
 - i) When it can be observed within the ranges as shown (a) and (b) in Fig.7-60, proceed to the step 5), keeping it as it is.

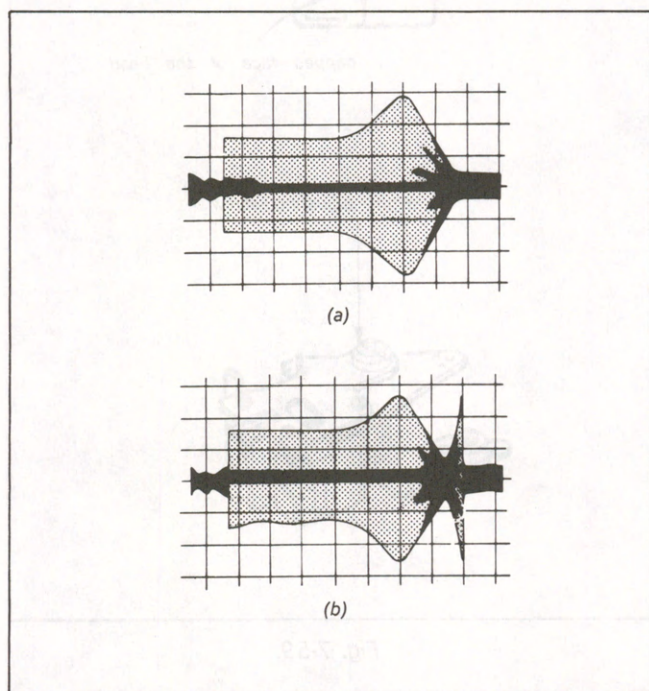


Fig. 7-60.

- ii) If the waveform swells lower than the one shown in (a) in Fig.7-60 (Fig.7-61), loosen the capstan lock screw and turn the capstan adjusting screw counterclockwise so that the waveform could be taken within the ranges shown in Fig. 7-60

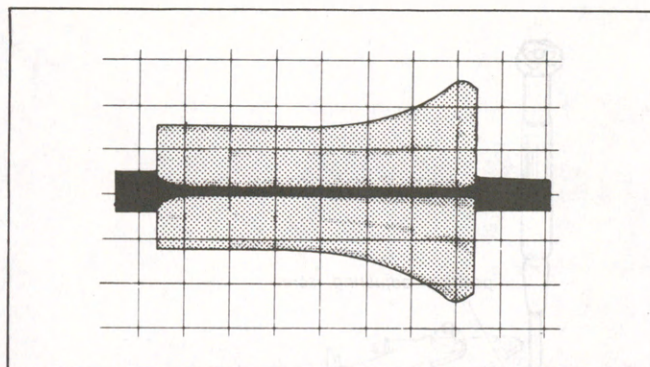


Fig. 7-61.

- iii) If the waveform swells higher than the one shown in (b) in Fig.7-60 (Fig.7-62), loosen the capstan lock screw and turn the capstan adjusting screw clockwise so that the waveform could be taken within the ranges shown in Fig. 7-60.

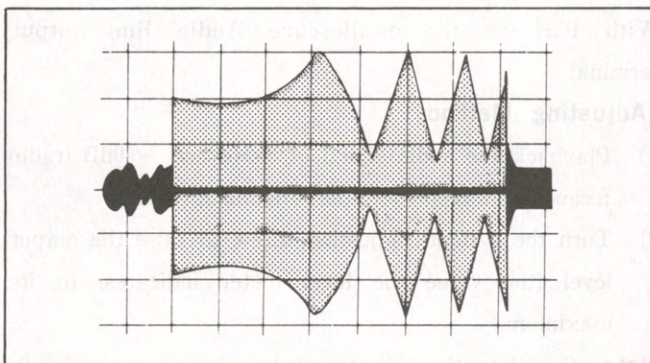


Fig. 7-62.

Note : Once the screw is turned, do not proceed to the next step until the waveform gets stabilized (wait for ten to fifteen seconds.)

- 5) Lock the capstan lock screw (turn it clockwise until it can hardly get turned, and further tighten it by approx. thirty degrees.). At the time, the waveform varies itself a little. If it swells out of the ranges shown in Fig.7-60, repeat the step 4).
- 6) Flatten the waveform using the No.7 guide and let the tape run along the No.8 guide. If the exit waveform swells out, flatten it using the No.7 guide and let the tape run along the No.8 guide again.
- 7) Check and adjust the waveform, following the step 5) in "7-4-3 Exit side tracking adjustment".

7-4-6. Checking the Tape Feed Rate After Adjusting the Tape Path

After adjusting the tape path, following 7-4-1 to 7-4-5, check the tape feed rate as mentioned below.

1) Prepare a reel L-830 on the market. Referring to Fig. 7-41, take off the cassette cover.

2) Play back the reel L-830 to check the tape as follows:

(1) Entrance

Confirm if the tape is bended and damaged on the No.7 guide upper flange, the No.8 guide upper flange, the No.10 guide upper or lower flange (It does not matter whether it is curled or not, but it should not bended.). (Fig. 7-64)

3) If the tape cannot run normally in 2), readjust the tape path in the following manner.

a) If it cannot at the entrance, see 7-4-2.

b) If it cannot at the exit, see 7-4-3.

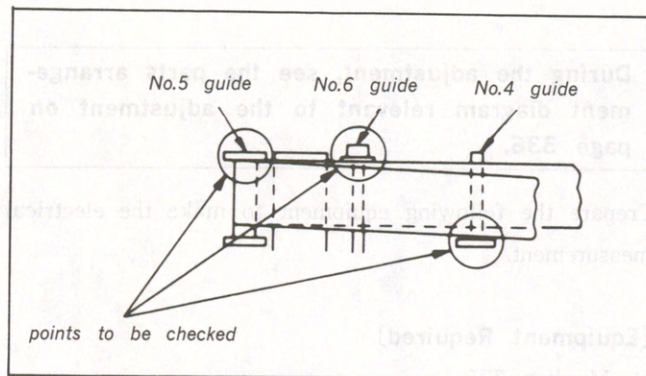


Fig. 7-63.

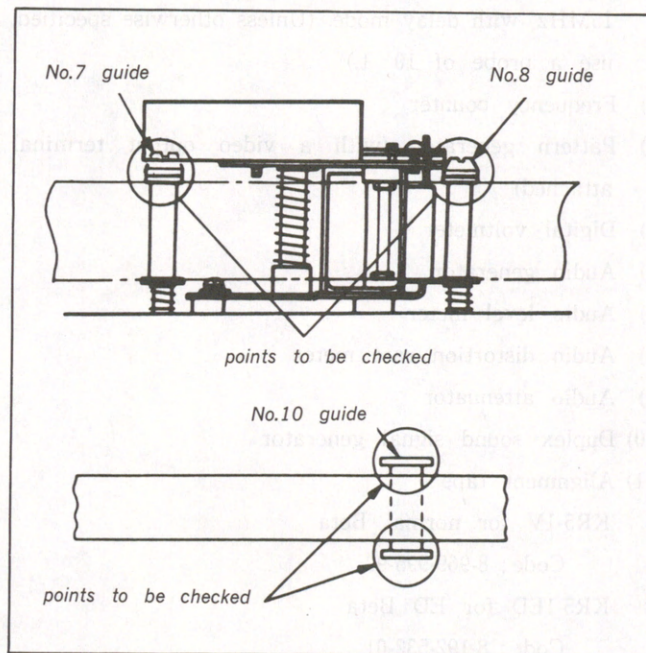


Fig. 7-64.

Time	Audio signal	Video signal	Mode
1	3kHz-10dB	Color bar	I
2	22kHz-30dB	Monoscope	II
3	3kHz-30dB	RF sweep	III
4	12kHz-10dB	Tracking	IV
5	22kHz-30dB	Color bar	V
6	3kHz-10dB	Color bar	VI
7	22kHz-30dB	Monoscope	VII

During the adjustment, see the parts arrangement diagram relevant to the adjustment on page 336.

Prepare the following equipment to make the electrical measurement.

[Equipment Required]

- 1) Monitor TV
- 2) Oscilloscope, Dual-trace, Bandwidth more than 15MHz, with delay mode. (Unless otherwise specified, use a probe of 10:1.)
- 3) Frequency counter
- 4) Pattern generator (with a video output terminal attached)
- 5) Digital voltmeter
- 6) Audio generator
- 7) Audio level meter
- 8) Audio distortion rate meter
- 9) Audio attenuator
- 10) Duplex sound signal generator
- 11) Alignment tape

KR5-1V for normal Beta

Code: 8-969-995-92

KR5-1ED for ED Beta

Code: 8-192-532-01

[Connection]

Unless otherwise specified, connect the equipment as follows to make the adjustment.

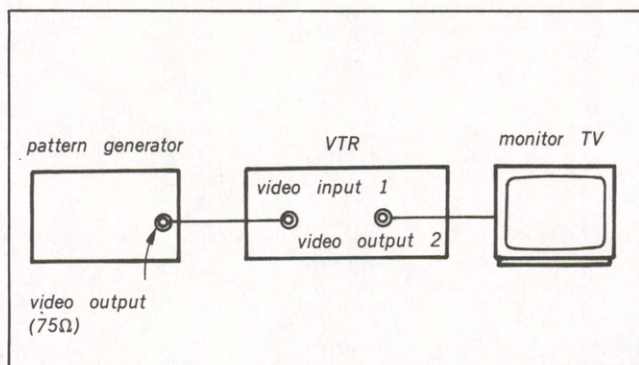


Fig. 8-1.

[Setting-up in Making the Adjustment]

For making the electrical adjustment, those video signals which are sent out of the NTSC pattern generator. So these video output signals must satisfy the specification. Connect the oscilloscope with the video input terminal 1, and confirm that the amplitude of the video signal synchronizing signal, of the video signal seen on the screen, and of the burst signal are approx. 0.3V, approx. 0.7V and approx. 0.3V, respectively, and that their waveforms are even.

The video signal (Color bar signal) used in this adjustment is shown in Fig 8-2.

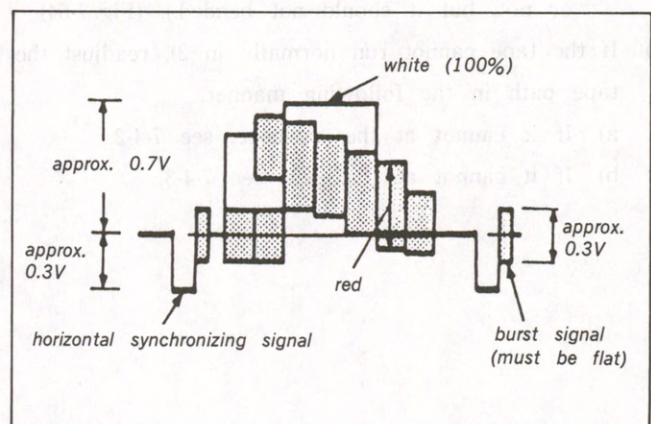


Fig. 8-2. Color bar signal sent out of pattern generator.

[Alignment Tape]

In making the adjustment, an alignment tape for normal Beta (KR5-1V) or for ED Beta (KR5-1ED). If a model is specified, be sure to use a tape of the model. If not, either model of a tape can be used.

KR5-1V

	Mode	Video signal	Audio signal	Time
1	β II	Color bar	3kHz-10dB	Four minutes each
2		Monoscope	333Hz-30dB	
3		RF sweep	5kHz-30dB	
4		Tracking	1kHz-10dB	
5		Color bar	Beta hi-fi 400Hz ±25kHz DEV(-10dB)	
6	β III	Color bar	3kHz-10dB	
7		Monoscope	5kHz-30dB	

KR5-1ED

	Mode	Video signal	Audio signal			Time
			Normal	Beta hi-fi		
				L ch	R ch	
1	β II	Color bar	333Hz -30dB	400Hz -10dB	1kHz -10dB	Five minutes each
2		Monoscope	7kHz -30dB			
3		RF sweep	3kHz -10dB			
4	β III	Color bar	333Hz -30dB	400Hz -10dB	1kHz -10dB	
5		Monoscope	5kHz -30dB			

Fig. 8-3 shows the 75% color bar signal recorded in the alignment tape.

Note: The signal must be measured at the video output terminal 1 (75 Ω)

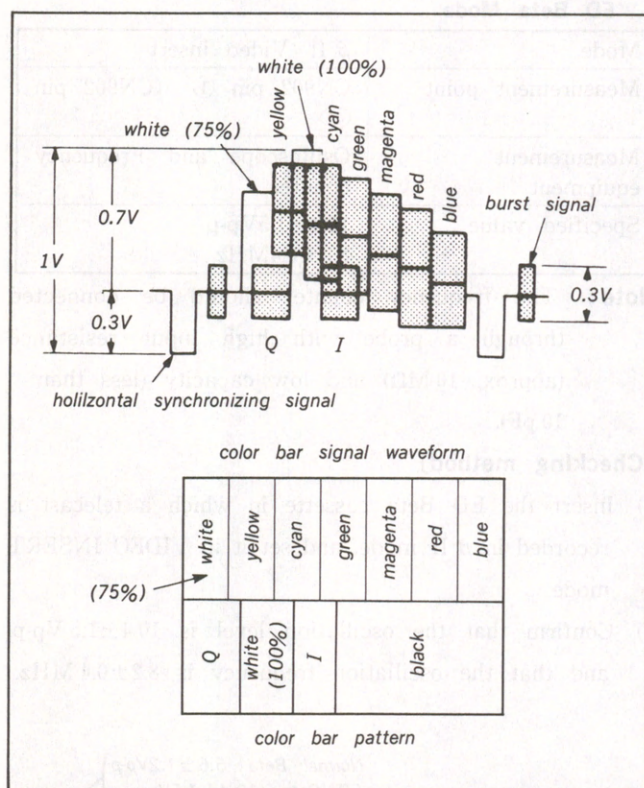


Fig. 8-3. Color bar signal in the alignment tape

[Specified Input/Output Level and Impedance]

Input/Output Terminal

Video input Pin jack (1) $\times$ 2 systems
Input signal: 1 Vp-p, 75 Ω , unbalanced, negatively synchronized

* Can be switched into the S video input

Video output Pin jack (1) $\times$ 2 systems
Output signal: 1 Vp-p, 75 Ω , unbalanced, negatively synchronized

* Two systems of the S video output also available

Audio input Pin jack (2) $\times$ 2 systems, plated with gold

Input level: -10 dBs

(0 dBs = 0.775 Vrms)

Input impedance: More than 47 k Ω

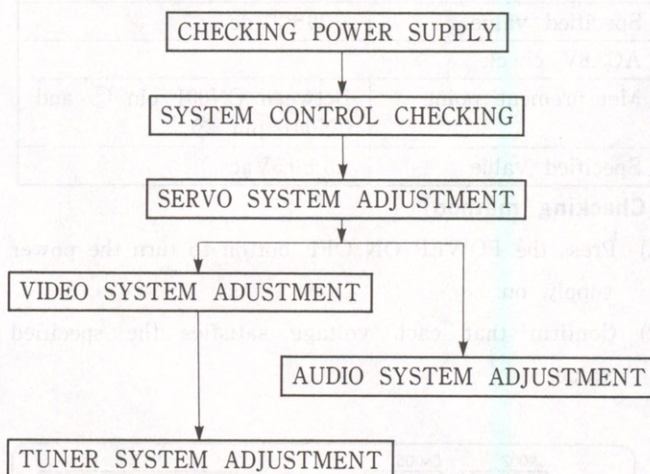
Audio output Pin jack (2) $\times$ 2 systems, plated with gold

Specified output: -10 dBs when loaded at 47 k Ω

Loaded impedance: More than 10 k Ω

[Adjusting Sequence]

Make the electrical adjustment in the following sequence.



8-1. CHECKING POWER SUPPLY (PS-165 board)

Mode	E-E
Measurement equipment	Digital voltmeter
SWD 12V check	
Measurement point	CN002 pin ①
Specified value	$12.0 \pm 0.2\text{Vdc}$
SWD 9V check	
Measurement point	CN002 pin ②
Specified value	$9.0 \pm 0.2\text{Vdc}$
SWD 5V check	
Measurement point	CN003 pin ③
Specified value	$5.0 \pm 0.3\text{Vdc}$
REG 5V check	
Measurement point	CN002 pin ③
Specified value	$5.0 \pm 0.2\text{Vdc}$
UNREG 8V check	
Measurement point	CN005 pin ⑥
Specified value	$8 \pm 2\text{Vdc}$
+45V check	
Measurement point	CN005 pin ①
Specified value	$43 \pm 2\text{Vdc}$
UNSW -12V check	
Measurement point	CN004 pin ③
Specified value	$-12 \pm 2\text{Vdc}$
-30V check	
Measurement point	CN001 pin ①
Specified value	$-30 \pm 2\text{Vdc}$
AC3.8V check	
Measurement point	Between CN001 pin ② and CN001 pin ③
Specified value	$3.8 \pm 0.5\text{Vac}$

[Checking method]

- 1) Press the POWER ON/OFF button to turn the power supply on.
- 2) Confirm that each voltage satisfies the specified value.

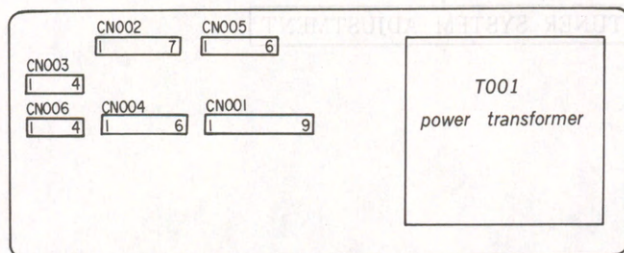


Fig. 8-4. PS-165 board (component side)

8-2. SYSTEM CONTROL CHECKINGS

8-2-1. Flying Erase Check (FE-17 Board)

< > Parenthesized are B channel adjusting pins.

1. Normal Beta Mode

Mode	β II Video insert
Measurement point	CN902 pin ① <CN902 pin ④>
Measurement equipment	Osilloscope and Frequency counter
Specified value	$5.6 \pm 1.2\text{Vp-p}$ $8.2 \pm 0.4\text{MHz}$

Note: The frequency counter should be connected through a probe with high input resistance (approx. $10\text{M}\Omega$) and low capacity (less than 10pF).

[Checking method]

- 1) Insert the normal Beta cassette in which a telecast is recorded in β II mode, and set it in VIDEO INSERT mode.
- 2) Confirm that the oscillation level is $5.6 \pm 1.2\text{Vp-p}$, and that the oscillation frequency is $8.2 \pm 0.4\text{MHz}$.

2. ED Beta Mode

Mode	β II Video insert
Measurement point	CN902 pin ① <CN902 pin ④>
Measurement equipment	Osilloscope and Frequency counter
Specified value	$10.4 \pm 1.5\text{Vp-p}$ $8.2 \pm 0.4\text{MHz}$

Note: The frequency counter should be connected through a probe with high input resistance (approx. $10\text{M}\Omega$) and low capacity (less than 10pF).

[Checking method]

- 1) Insert the ED Beta cassette in which a telecast is recorded in β II mode, and set it in VIDEO INSERT mode.
- 2) Confirm that the oscillation level is $10.4 \pm 1.5\text{Vp-p}$, and that the oscillation frequency is $8.2 \pm 0.4\text{MHz}$.

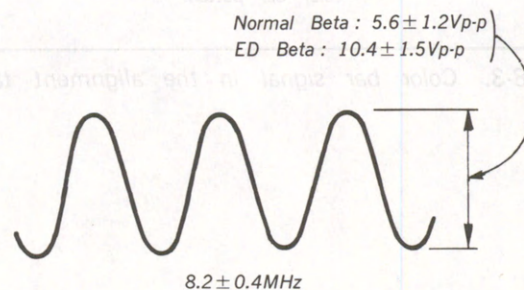


Fig. 8-5. Checking flying erase

8-3. SERVO SYSTEM ADJUSTMENTS

Either of the normal Beta cassette and the ED Beta cassette can be used for adjusting the servo system.

8-3-1. Reel Servo System Adjustment

1. Reel Motor Voltage Check (SS-80 board)

Signal	An arbitrary tape
Measurement point	CN504 pin ①
Measurement equipment	Digital voltmeter
Checking at time of picture search (REVIEW)	
Mode	Picture search (REVIEW)
Specified value	5.9 ± 0.1 Vdc
Checking at time of FF or of REW	
Mode	FF or REW
Specified value	8.8 ± 0.2 Vdc
Checking at time of play back	
Mode	Play back
Specified value	2.7 ± 0.2 Vdc

[Checking method]

- 1) Confirm that the reel motor voltage in each mode satisfies the specified value.

8-3-2. Drum Servo System Adjustment

1. Voltage Check (SS-80 board)

Mode	E-E
Signal	An arbitrary signal
Measurement point	Digital voltmeter
5.6V check	
Measurement point	IC006 pin ③①
Specified value	5.6 ± 0.3 Vdc
3.5V check	
Measurement point	IC006 pin ⑩
Specified value	3.5 ± 0.2 Vdc

[Checking method]

- 1) Confirm that the voltage measured at IC006 pin ⑩ and ③① is 3.5 ± 0.2 Vdc and 5.6 ± 0.3 Vdc, respectively.

2. Clock Check (SS-80 board)

Mode	E-E
Signal	An arbitrary signal
Measurement point	IC006 pin ②⑧
Measurement equipment	Oscilloscope
Specified value	More than 0.4Vp-p

[Checking method]

- 1) Confirm that the value the clock indicates at IC006 pin ②⑧ is more than 0.4Vp-p.

3. Drum Free Speed Adjustment (SS-80 board)

Mode	Playback
Signal	Alignment tape β II color bar or monoscope
Measurement point	CH1 : IC006 pin ⑬ (TP003) CH2 : IC006 pin ③⑨ (TP009)
Measurement equipment	Oscilloscope
Adjustment element	RV005
Specified value	520 ± 20 μ sec

[Adjustment method]

- 1) Adjust to 520 ± 20 μ sec with RV005.

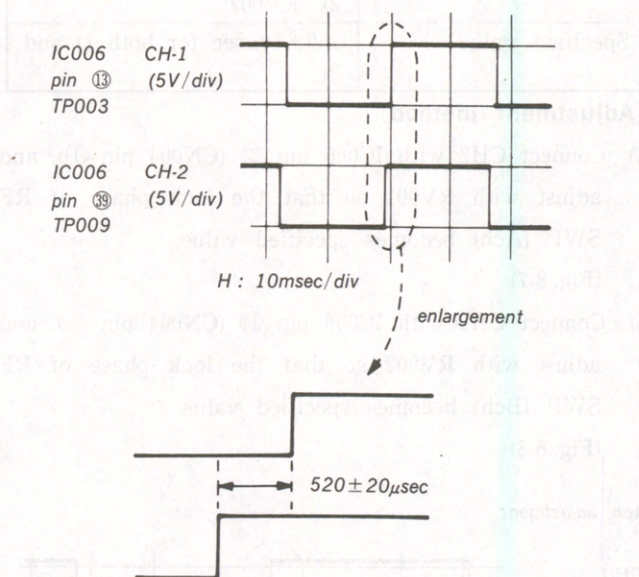


Fig. 8-6. Drum free speed adjustment

4. RF Switching Position Adjustment (SS-80 board)

Mode	Playback
Signal	Alignment tape β II color bar or monoscope
Measurement point	CH1 : IC006 pin ③⑨ (TP009 : RF SWP) CH2 : 1) IC006 pin ③② (CN004 pin ① : APG) 2) IC006 pin ④⑩ (CN004 pin ④ : BPG)
Measurement equipment	Oscilloscope
Adjustment element	1) RV001 2) RV002
Specified value	$750 \pm 30 \mu\text{sec}$ for both 1) and 2)

[Adjustment method]

- 1) Connect CH2 with IC006 pin ③② (CN004 pin ①), and adjust with RV001 so that the lock phase of RF SWP (Ach) becomes specified value.
(Fig. 8-7)
- 2) Connect CH2 with IC006 pin ④⑩ (CN004 pin ④), and adjust with RV002 so that the lock phase of RF SWP (Bch) becomes specified value.
(Fig. 8-8)

Ach adjustment

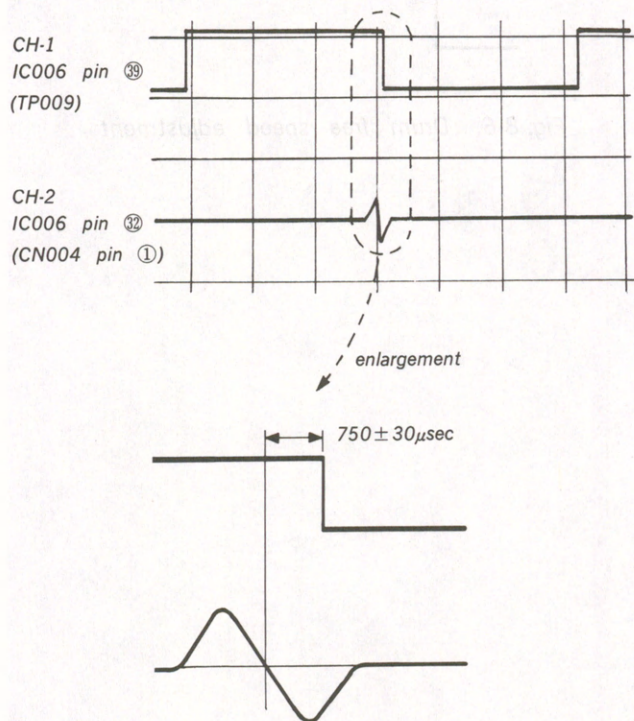


Fig. 8-7. A CH RF switching position adjustment

Bch adjustment

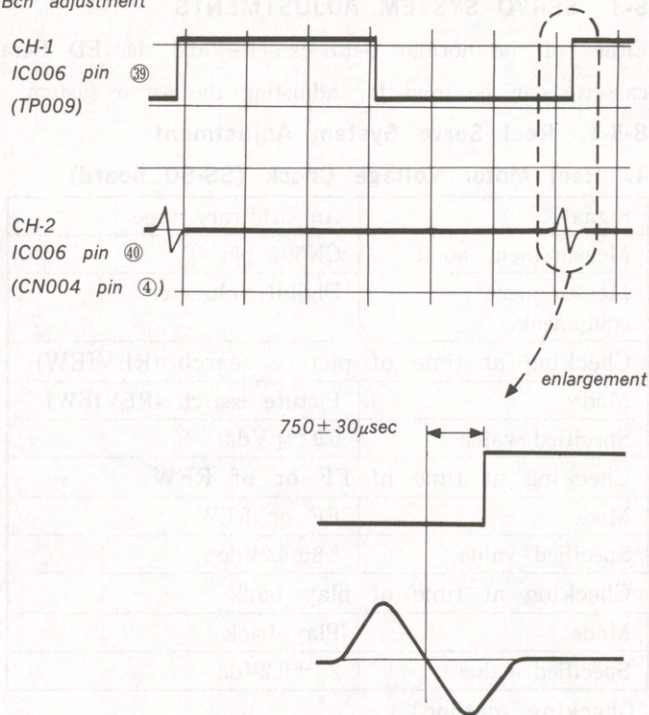


Fig. 8-8. B CH RF switching position adjustment

8-3-3. Capstan Servo System adjustments

1. Capstan DC Bias Adjustment (SS-80 board)

Mode	Playback
Signal	Alignment tape β II/ β III color bar or monoscope
Measurement point	IC006 pin ②⑩ (TP006)
Measurement equipment	Oscilloscope (trigger slope: +)
Adjustment element	β III : RV007 β II : RV010 β II $\times$ 2 (or β I) : RV008 β III $\times$ 2 : RV009
Specified value	DUTY : $50 \pm 3\%$

[Adjustment method]

- 1) Adjust the duty (ratio for A and B) to $50\% \pm 5\%$ with the adjustment element, as shown Tab. 8-1.

Play back mode	Adjusting RV	DUTY
β III	RV007	$50 \pm 3\%$
β II	RV010	
β II $\times$ 2 (or β I)	RV008	
β III $\times$ 2	RV009	

Table. 8-1

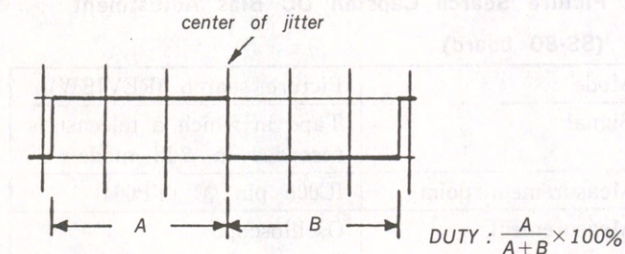


Fig. 8-9. Capstan DC bias adjustment

2. PB Tracking Center Adjustment (SS-80 board)

Mode	Playback
Signal	Alignment tape β II/ β III color bar or monoscope
Measurement point	CH1 : IC006 pin ⑬ (TP003) CH2 : IC006 pin ⑮ (TP011)
Measurement equipment	Oscilloscope
Adjustment element	RV014
Specified value	$860 \pm 20 \mu\text{sec}$

[Adjustment method]

- 1) Set the NORMAL TRACKING knob to the center click point.
- 2) Adjust with RV014 so that the lock phase of CH-1 and CH-2 becomes specified value.

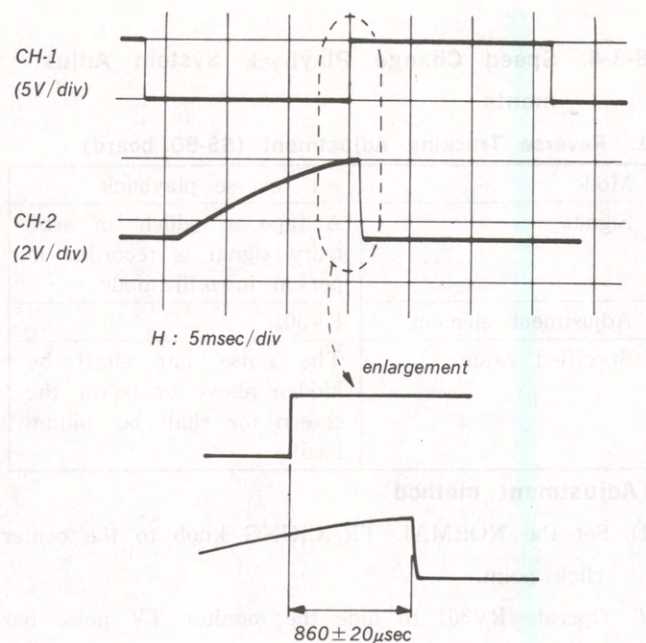


Fig. 8-10. PB tracking center adjustment

3. REC Tracking Center Adjustment (SS-80 board)

Mode	Record
Signal	Color bar
Measurement point	CH1 : IC006 pin ⑬ (TP003) CH2 : IC006 pin ⑮ (TP011)
Measurement equipment	Oscilloscope
Adjustment element	RV013
Specified value	$860 \pm 20 \mu\text{sec}$

[Adjustment method]

- 1) Adjust with RV013 so that the lock phase of CH-1 and CH-2 becomes specified value.

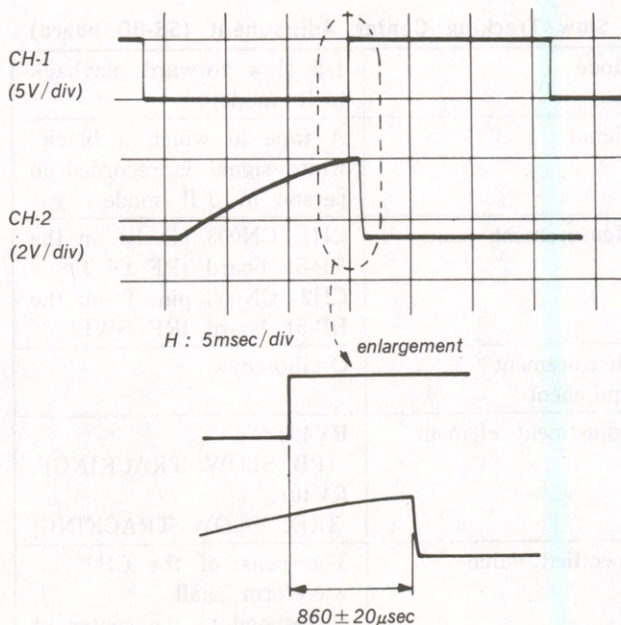


Fig. 8-11. REC tracking center adjustment

8-3-4. Speed Change Playback System Adjustments

1. Reverse Tracking Adjustment (SS-80 board)

Mode	×1 reverse playback
Signal	A tape in which an arbitrary signal is recorded in person in β III mode
Adjustment element	RV301
Specified value	The noise bar shall be hidden above or below the screen (or shall be minimized).

[Adjustment method]

- 1) Set the NORMAL TRACKING knob to the center click point.
- 2) Operate RV301 to hide the monitor TV noise bar above or below the screen (or to minimize it).

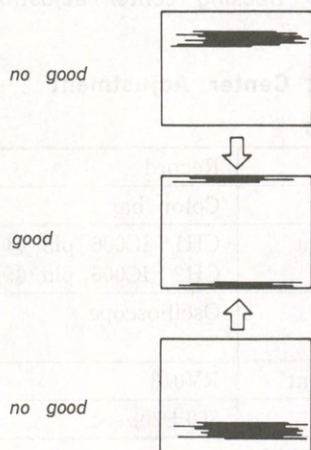


Fig. 8-12. Reverse tracking adjustment

2. Slow Tracking Center Adjustment (SS-80 board)

Mode	1/5 slow forward playback (β II mode)
Signal	A tape in which a black/white signal is recorded in person in β II mode
Measurement point	CH1 : CN003 pin ③ on the RP-51 board (RF OUT) CH2 : CN003 pin ① on the RP-51 board (RF SWP)
Measurement equipment	Oscilloscope
Adjustment element	RV402 (PB SLOW TRACKING) RV401 (REC SLOW TRACKING)
Specified value	The peak of the CH1 waveform shall correspond to the center of the A CH field.

[Adjustment method]

- 1) Set the SLOW TRACKING knob to center click.
- 2) Let the peak of the CH1 waveform correspond to the center of the A CH field, using RV402.
- 3) Connect the emitter of Q418 with the collector of it through the jumper wire.
- 4) Let the peak of the CH1 waveform correspond to the center of the A CH field, using RV401.
- 5) Remove the jumper wire.

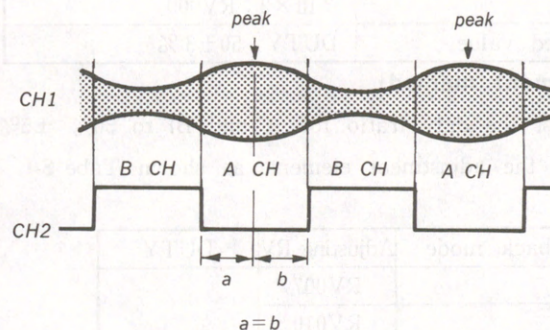


Fig. 8-13. Slow tracking center adjustment

3. Picture Search Capstan DC Bias Adjustment (SS-80 board)

Mode	Picture search (REVIEW)
Signal	Tape in which a telecast is recorded in β III mode
Measurement point	IC006 pin ② (TP004)
Measurement equipment	Oscilloscope (trigger slope: +)
Adjustment element	RV011
Specified value	DUTY40±3 %

[Adjustment method]

- 1) Adjust the duty ratio to 40±3% with RV011

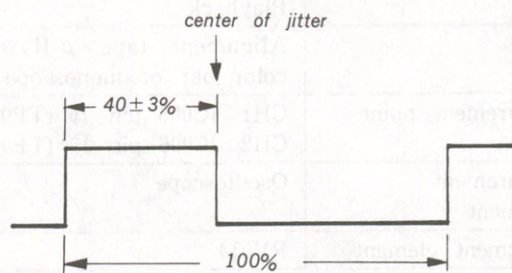


Fig. 8-14. Picture search capstan DC bias adjustment

4. STILL f_H Adjustment (SS-80 board)

Mode	Playback pause (STILL)
Signal	Alignment tape β II color bar or monoscope
Measurement point	IC012 pin ⑤ (COMP SYNC)
Measurement equipment	Oscilloscope
Adjustment element	RV015
Specified value	$0 \pm 0.1 \mu\text{sec}$

[Adjustment method]

- 1) Set this unit in playback mode.
- 2) Measure the cycle of the COMP SYNC signal.
- 3) Set this unit in playback pause mode.
- 4) Equalize the cycle of the COMP SYNC signal with that in playback mode, using RV015.

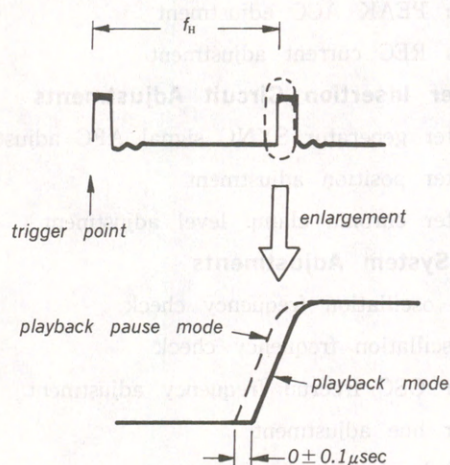


Fig. 8-15. STILL f_H adjustment

5. Picture Search f_H Checking (SS-80 board)

< > Parenthesized is the specified value in REVIEW mode.

Mode	Picture search CUE <REVIEW>
Signal	Alignment tape β II color bar or monoscope
Measurement point	CN012 pin ⑤ (COMP SYNC)
Measurement equipment	Oscilloscope
Specified value	$+0.3 \pm 0.5 \mu\text{sec}$ $<-0.3 \pm 0.5 \mu\text{sec}>$

[Checking method]

- 1) Set this unit in playback mode.
- 2) Measure the cycle of the COMP SYNC signal.
- 3) Set this unit in picture search CUE <REVIEW> mode.

- 4) Confirm that the cycle of the COMP SYNC signal is $0.3 \pm 0.5 \mu\text{sec}$ < $-0.3 \pm 0.5 \mu\text{sec}$ > longer <shorter> than that in playback mode.

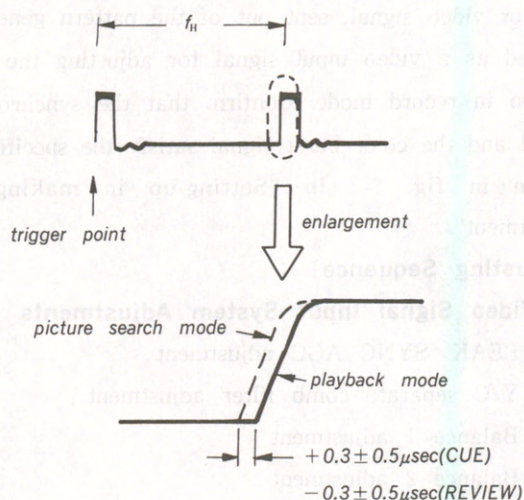


Fig. 8-16. Picture search f_H check

6. Digital Scan f_H Adjustment (SS-80 board)

Mode	Digital scan (CUE)
Signal	A tape recorded in the tape L750 in β II mode
Measurement point	CN012 pin ⑤ (COMP SYNC)
Measurement equipment	Oscilloscope
Adjustment element	RV012
Specified value	$0 \pm 0.2 \mu\text{sec}$

[Adjustment method]

- 1) Set this unit in playback mode.
- 2) Measure the cycle of the COMP SYNC signal.
- 3) Set this unit in the digital scan mode (CUE)
- 4) Equalize the cycle of the COMP SYNC signal with that in playback mode, using RV012

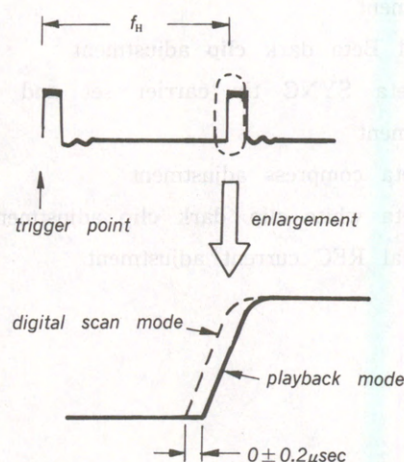


Fig. 8-17. Digital scan f_H adjustment

8-4. VIDEO SYSTEM ADJUSTMENTS

As a rule, adjust each item in the following sequence. A color video signal, sent out of the pattern generator, is used as a video input signal for adjusting the video system in record mode. Confirm that the synchronizing signal and the color burst signal satisfy the specification shown in fig. 8-2 in "Setting-up in making the adjustment".

[Adjusting Sequence]

1. Video Signal Input System Adjustments

1. PEAK/SYNC AGC adjustment
2. Y/C separate comb filter adjustment
3. Balance 1 adjustment
4. Balance 2 adjustment
5. 2H comb filter adjustment
6. 1H gain adjustment
7. Chroma cancel level adjustment
8. Y DET level adjustment
9. Y comb filter AGC adjustment

2. Y Signal Play Back System Adjustments

1. ED Beta PB Playback frequency characteristic adjustment
2. Normal Beta PB Playback frequency characteristic adjustment
3. ED Beta de-emphasis input level adjustment
4. ED Beta PB Y signal level adjustment
5. ED Beta expander adjustment
6. Normal Beta de-emphasis level check
7. Normal Beta PB Y signal level adjustment

3. Y Signal Record System Adjustments

1. Pre-emphasis input level adjustment
2. Normal Beta SYNC tip carrier set and deviation adjustment
3. Normal Beta dark clip adjustment
4. ED Beta SYNC tip carrier set and deviation adjustment
5. ED Beta compress adjustment
6. ED Beta white clip/dark clip adjustment
7. Y signal REC current adjustment

4. Chroma Signal System Adjustments

1. 3.58 MHz VXO adjustment
2. AFC VCO adjustment
3. 4.27 MHz carrier balance adjustment
4. Chroma PEAK ACC adjustment
5. Chroma REC current adjustment

5. Character Insertion Circuit Adjustments

1. Character generator SYNC signal AFC adjustment
2. Character position adjustment
3. Character chroma clamp level adjustment

6. Digital System Adjustments

1. Crystal oscillation frequency check
2. PLL oscillation frequency check
3. Decoder OSC freerun frequency adjustment
4. Decoder hue adjustment
5. A/D Y level adjustment
6. A/D REF voltage adjustment
7. PLL lock voltage adjustment
8. PLL lock phase SEG adjustment
9. BFP position adjustment
10. AFC adjustment
11. Encoder carrier balance adjustment
12. Chroma level and burst level adjustment
13. Write clock adjustment
14. E-E hue adjustment
15. PB hue adjustment

8-4-1. Video Signal Input System Adjustments

1. PEAK/SYNC AGC Adjustment (VE-1 board)

Mode	E-E
Signal	Color bar
Measurement point	CN011 pin ③
Measurement equipment	Oscilloscope
Adjustment element	SYNC AGC : RV002 PEAK AGC : RV001
Specified value	PEAK AGC : $1.075 \pm 0.025V_{p-p}$ SYNC AGC : $1.000 \pm 0.025V_{p-p}$

[Adjustment method]

- 1) Turn RV001 counterclockwise (↺), viewed from the side where parts are arranged, as much as possible, and turn the PEAK AGC off.
- 2) Adjust with RV002 so that the PEAK AGC level becomes $1.075 \pm 0.025V_{p-p}$.
- 3) Slowly turn RV001 clockwise (↻) until the output level begin to fall.
- 4) Adjust with RV002 so that the SYNC AGC level becomes $1.000 \pm 0.025V_{p-p}$.

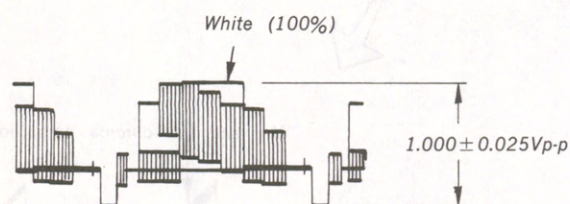


Fig. 8-18. PEAK/SYNC AGC adjustment

2. Y/C Separate Comb Filter Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	IC101 pin ⑫
Measurement equipment	Oscilloscope
Adjustment element	RV151, LV151
Specified value	Minimize the residual chroma constituent

[Adjustment method]

- 1) Minimize the residual chroma component by alternately adjusting RV151 and LV151.

Before the adjustment Residual chroma constituent

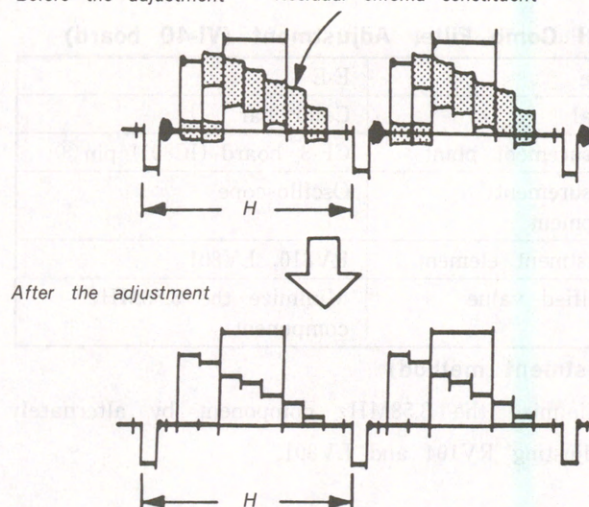


Fig. 8-19. Y/C separate comb filter adjustment

3. Balance 1 Adjustment (VI-40 board)

Mode	E-E
Signal	Not issued
Measurement point	+ : CF-3 board (IC801) pin ⑳ - : CF-3 board (IC801) pin ⑳
Measurement equipment	Digital voltmeter
Adjustment element	RV806
Specified value	$0.12 \pm 0.01V_{dc}$

[Adjustment method]

- 1) Adjust to $0.12 \pm 0.01V_{dc}$ with RV806.

4. Balance 2 Adjustment (VI-40 board)

Mode	E-E
Signal	Not issued
Measurement point	+ : CF-3 board (IC801) pin ⑲ - : CF-3 board (IC801) pin ⑲
Measurement equipment	Digital voltmeter
Adjustment element	RV802
Specified value	$0.12 \pm 0.01V_{dc}$

[Adjustment method]

- 1) Adjust to $0.12 \pm 0.01V_{dc}$ with RV802.

5. 2H Comb Filter Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	CF-3 board (IC801) pin ⑧
Measurement equipment	Oscilloscope
Adjustment element	RV810, LV801
Specified value	Minimize the 3.58MHz component

[Adjustment method]

- 1) Minimize the 3.58MHz component by alternately adjusting RV104 and LV801.

Minimize the 3.58MHz component.



Fig. 8-20. 2H comb filter adjustment

6. 1H Gain Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	CF-3 board (IC801) pin ⑩
Measurement equipment	Oscilloscope
Adjustment element	RV805
Specified value	Minimize the 3.58MHz component

[Adjustment method]

- 1) Minimize the 3.58MHz component by adjusting RV805.

3.58MHz constituent

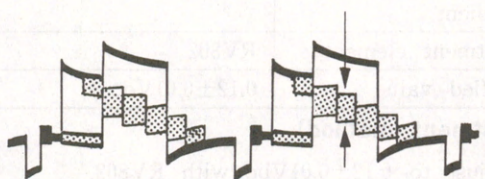


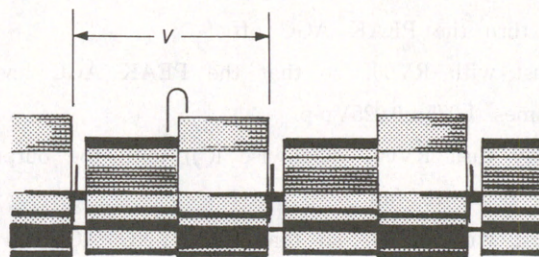
Fig. 8-21. 1H gain adjustment

7. Chroma Cancel Level Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	Emitter Q803
Measurement equipment	Oscilloscope
Adjustment element	RV809
Specified value	Minimize the chroma amplitude of non-correlative signal

[Adjustment method]

- 1) Minimize the chroma amplitude of the non-correlative chroma signal with RV809.



Enlarging the non-correlative chroma signal

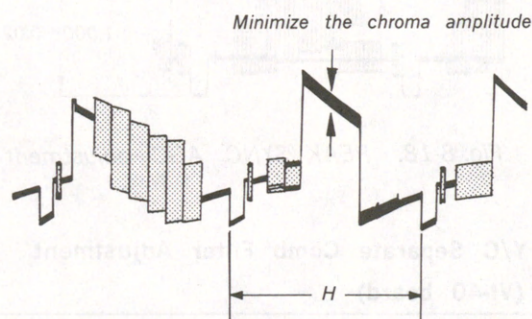


Fig. 8-22. Chroma cancel level adjustment

8. Y DET level Adjustment (VI-40 board)

Mode	Playback
Signal	Alignment tape (KR5-1V) color bar
Measurement point	CH1 : CN110 pin ① (PB Y OUT) CH2 : CF-3 board (IC801) pin ⑫
Measurement equipment	Oscilloscope
Adjustment element	RV804
Specified value	$600 \pm 50 \text{mVp-p}$

[Adjustment method]

- 1) Adjust with RV804 so that the non-correlative detect level becomes $600 \pm 50 \text{mVp-p}$.
- 2) Connect CH2 with the CF-3 board (IC801) pin⑫
- 3) Confirm that a pulse reverse to the pin ⑫ in polarity is generated and that its level is 300mVp-p .

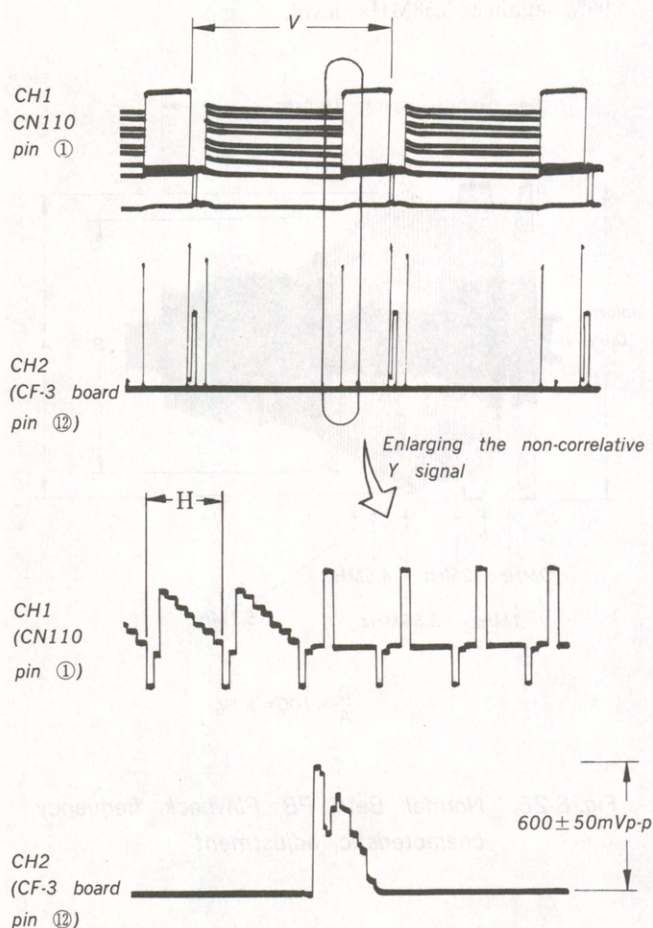


Fig. 8-23. Y DET level adjustment

9. Y Comb Filter AGC Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	YK-2 board (IC301) pin⑩ (Providing the pin with a resistance of $22\text{k}\Omega$, con- nect it with the tip of the probe of 10:1)
Measurment equipment	Oscilloscope
Adjustment element	RV301

[Adjustment method]

- 1) Adjust to eliminate level differences for each H step with RV301.

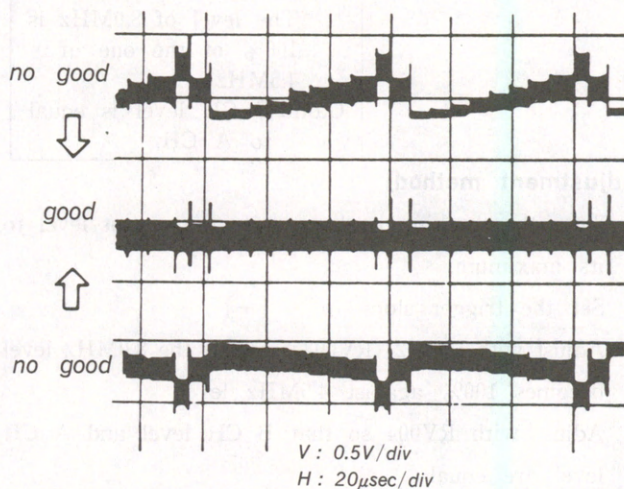


Fig. 8-24. Y comb filter AGC adjustment

8-4-2. Y Signal Playback System Adjustments

1. ED Beta PB Playback Frequency Characteristic

Adjustment (RP-51 board)

< > Parenthesized element is used for B CH.

Mode	Playback
Signal	Alignment tape (KR5-1ED) β II RF sweep
Measurement point	CN003 pin ③ (PB RF) External trigger : CN003 pin ① (RF SWP)
Measurement equipment	Oscilloscope
Adjustment element	Frequency characteristics : RV002 <RV003> Gain : RV004
Specified value	Frequency characteristics : The level of 8.0MHz is 100% of the one of 4.5MHz Gain : B CH level is equal to A CH.

[Adjustment method]

- 1) Turn the tracking knob to raise the output level to its maximum.
- 2) Set the trigger slope to - [+].
- 3) Adjust with RV002 <RV003> so that the 8.0MHz level becomes 100% against 4.5MHz level.
- 4) Adjust with RV004 so that B CH level and A CH level are equal.

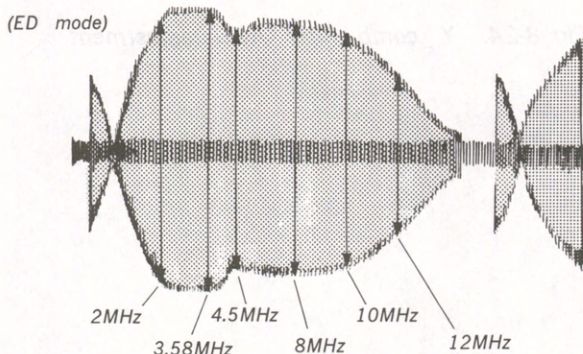


Fig. 8-25. ED Beta PB Playback frequency characteristic adjustment

2. Normal Beta PB Playback Frequency Characteristic Adjustment (RP-51 board)

Mode	Playback
Signal	Alignment tape (KR5-1V) β II RF sweep
Measurement point	CN003 pin ③ (PB RF) External trigger : CN003 pin ① (RF SWP)
Measurement equipment	Oscilloscope
Adjustment element	RV005
Specified value	The level of 5.1MHz is 90% of the one of 3.58MHz.

[Adjustment method]

- 1) Turn the tracking knob to raise the output level to its maximum.
- 2) Set the trigger slope to -.
- 3) Adjust with RV005 so that the 5.1MHz level becomes 90% against 3.58MHz level.

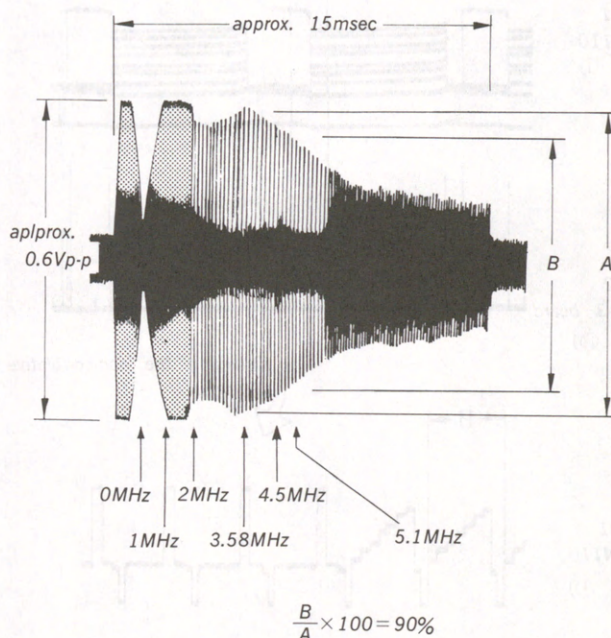


Fig. 8-26. Normal Beta PB Playback frequency characteristic adjustment

3. ED Beta De-emphasis Input Level Adjustment (VI-40 board)

Mode	Playback
Signal	Alignment tape (KR5-1ED) β II color bar
Measurement point	DE-4 board (IC201) pin ⑩
Measurement equipment	Oscilloscope
Adjustment element	RV201
Specified value	$0.80 \pm 0.02V_{p-p}$

Note: Connect a capacitor of 330pF between IC201 pin ② and GND.

[Adjustment method]

- 1) Adjust to $0.80 \pm 0.02V_{p-p}$ with RV201.

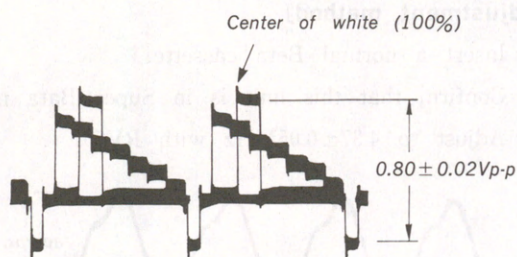


Fig. 8-27 ED Beta de-emphasis input level adjustment

4. ED Beta PB Y Signal Level Adjustment (VI-40 board)

Mode	Playback
Signal	Alignment tape (KR5-1ED), β II color bar
Measurement point	CN113 pin ① (PB Y)
Measurement equipment	Oscilloscope
Adjustment element	RV202
Specified value	$1.00 \pm 0.02V_{p-p}$

Note: Do not make the adjustment when "EDIT" is displayed

[Adjustment method]

- 1) Adjust to $1.00 \pm 0.02V_{p-p}$ with RV202.

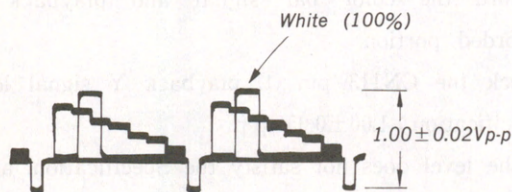


Fig. 8-28. ED Beta PB Y Signal level adjustment

5. ED Beta Expander Adjustment (VI-40 board)

Mode	E-E
Signal	Not issued
Measurement point	+ : DE-4 board (IC201) pin ② - : DE-4 board (IC201) pin ⑦
Measurement equipment	Digital voltmeter
Adjustment element	RV203
Specified value	$200 \pm 25mV_{dc}$

[Adjustment method]

- 1) Insert an ED Beta cassette.
- 2) Adjust to $200 \pm 25mV_{dc}$ with RV203.

6. Normal Beta De-emphasis Level Check (VI-40 board)

Mode	Playback
Signal	Alignment tape (KR5-1V) β II color bar
Measurement point	DE-4 board (IC201) pin ④
Measurement equipment	Oscilloscope
Specified value	$1.30 \pm 0.08V_{p-p}$

[Checking method]

- 1) Confirm that the level is $1.30 \pm 0.08V_{p-p}$

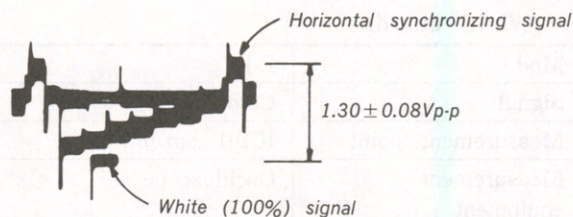


Fig. 8-29. Normal Beta de-emphasis level check

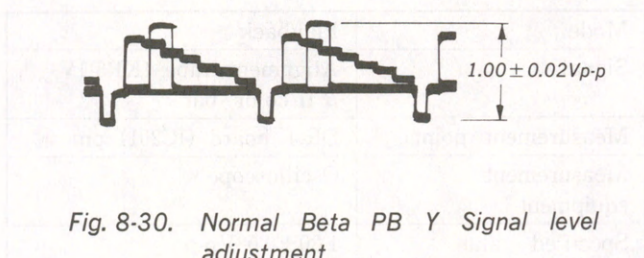
7. Normal Beta PB Y Signal Level Adjustment (VI-40 board)

Mode	Playback
Signal	Alignment tape (KR5-1V) β II clor bar
Measurement point	CN113 pin ①
Measurement equipment	Oscilloscope
Adjustment element	RV204
Specified value	$1.00 \pm 0.02 \text{Vp-p}$

Note: Do not make the adjustment when "EDIT" is displayed.

[Adjustment method]

- 1) Adjust to $1.00 \pm 0.02 \text{Vp-p}$ with RV204.



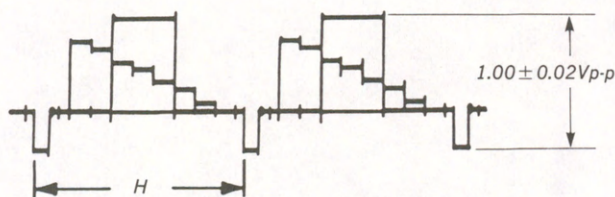
8-4-3. Y Signal Record System Adjustment

1. Pre-Emphasis Input Level Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	IC101 pin ⑥
Measurement equipment	Oscilloscope
Adjustment element	RV302
Specified value	$1.00 \pm 0.02 \text{Vp-p}$

[Adjustment method]

- 1) Adjust to $1.00 \pm 0.02 \text{Vp-p}$, with RV302.



2. Normal Beta SYNC Tip Carrier Set and Deviation Adjustment (VI-40 board)

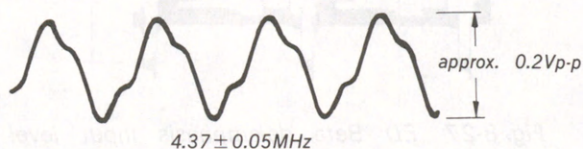
Note: Before adjusting them, be sure to confirm that "Normal Beta PB Y signal level adjustment" in "8-4-2. Y signal playback system adjustments" has been already made.

A. Normal Beta SYNC Tip Carrier Set Adjustment

Mode	E-E
Signal	Not issued
Measurement point	CN108 pin ①
Measurement equipment	Frequency counter
Adjustment element	RV701
Specified value	$4.37 \pm 0.05 \text{MHz}$

[Adjustment method]

- 1) Insert a normal Beta cassette.
- 2) Confirm that this unit is in Super Beta mode.
- 3) Adjust to $4.37 \pm 0.05 \text{MHz}$ with RV701.



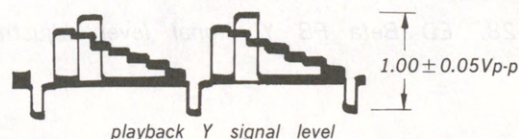
B. Normal Beta Deviation Adjustment

Mode	Self record/playback
Signal	Color bar
Measurement point	CN113 pin ①
Measurement equipment	Oscilloscope
Adjustment element	RV702
Specified value	$1.00 \pm 0.05 \text{Vp-p}$

Note: Do not make the adjustment when "EXIT" is displayed.

[Adjustment method]

- 1) Insert a normal Beta cassette.
- 2) Confirm that this unit is Super Beta mode.
- 3) Record the color bar signal and playback the recorded portion.
- 4) Check the CN113 pin ① playback Y signal level. Specification : $1.00 \pm 0.05 \text{Vp-p}$
- 5) If the level does not satisfy the Specification, adjust RV702 and repeat 1) and 2) .



3. Normal Beta Dark Clip Adjustment (VI-40 board)

Mode	E-E
Signal	Not issued
Measurement point	+ : PE-4 board (IC701) pin① - : PE-4 board (IC701) pin②
Measurement equipment	Digital voltmeter
Adjustment element	RV703
Specified value	$0 \pm 50\text{mVdc}$

[Adjustment method]

- 1) Insert a normal Beta cassette.
- 2) Adjust to $0 \pm 50\text{mVdc}$ with RV703.

4. ED Beta SYNC Tip Carrier Set and Deviation Adjustments (VI-40 board)

Note : • Before adjusting them, be sure to confirm that “ED Beta PB Y level adjustment” in “8-4-2. Adjustments Y signal playback system” has been already made.

A. ED Beta SYNC Tip Carrier Set Adjustment

Mode	E-E
Signal	Not issued
Measurement point	IC101 pin ②
Measurement equipment	Frequency counter
Adjustment element	RV706
Specified value	$6.70 \pm 0.05\text{MHz}$

[Adjustment method]

- 1) Insert an ED Beta cassette.
- 2) Adjust to $6.70 \pm 0.05\text{MHz}$ with RV706.

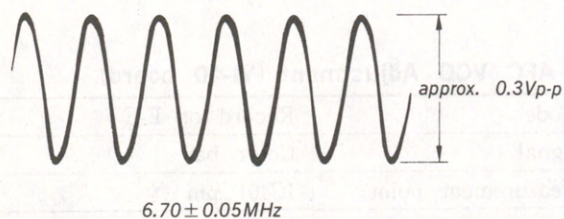


Fig. 8-34. ED Beta SYNC tip carrier set adjustment

B. ED Beta Deviation Adjustment

Mode	Self record/playback
Signal	Color bar
Measurement point	CN113 pin ①
Measurement equipment	Oscilloscope
Adjustment element	RV705
Specified value	$1.00 \pm 0.05\text{Vp-p}$

Note : Do not make the adjustment when “EDIT” is displayed.

[Adjustment method]

- 1) Insert an ED Beta cassette.
- 2) Input a color bar signal and record.
- 3) Playback the recorded portion.
- 4) Check the CN113 pin ① playback Y signal level.
Specification : $1.00 \pm 0.05\text{Vp-p}$
- 5) If the level does not satisfy the specification, adjust RV705 and repeat 1) and 2).

playback Y signal level

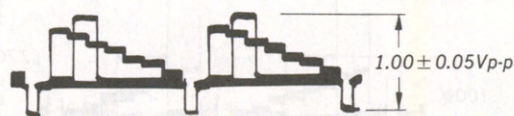


Fig. 8-35. ED Beta Deviation adjustment

5. ED Beta Compress Adjustment (VI-40 board)

Mode	E-E
Signal	Not issued
Measurement point	+ : PE-4 board (IC701) pin ⑬ - : PE-4 board (IC701) pin ⑭
Measurement equipment	Digital voltmeter
Adjustment element	RV704
Specified value	$200 \pm 25\text{mVdc}$

[Adjustment method]

- 1) Insert an ED Beta cassette.
- 2) Adjust to $200 \pm 25\text{mVdc}$ with RV704.

6. ED Beta White Clip/Dark Clip Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	PE-4 board (IC701) pin ⑪
Measurement equipment	Oscilloscope
Adjustment element	White clip : RV707 Dark clip : RV708
Specified value	White clip : 170 % Dark clip : 45 %

[Adjustment method]

- 1) Insert an ED Beta cassette.
- 2) Press the REC MODE button to set this unit in β III mode.
- 3) Adjust with RV707 so that the white clip level becomes 170%.
- 4) Adjust with RV708 so that the dark clip level becomes 45%.



Fig. 8-36. ED Beta white clip / dark clip adjustment

7. Y Signal REC Current Adjustment (RP-51 board)

(1) ED Beta Y Signal REC Current Adjustment

Mode	Record (ED β II)
Signal	Not issued
Measurement point	CN002 pin ①
Measurement equipment	Oscilloscope
Adjustment element	RV001
Specified value	$640 \pm 10\text{mVp-p}$

[Adjustment method]

- 1) Insert an ED Beta cassette to set this unit in β II record mode.
- 2) Adjust to $640 \pm 10\text{mVp-p}$ with RV001.

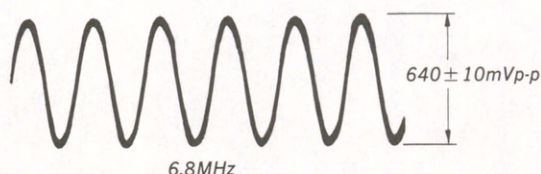


Fig. 8-37 ED Beta Y Signal REC current adjustment

(2) Normal Beta Y Signal REC Current Check

Mode	Record (β II)
Signal	Not issued
Measurement point	CN002 pin ①
Measurement equipment	Oscilloscope
Specified value	$430 \pm 30\text{mVp-p}$

[Checking method]

- 1) Insert a normal Beta cassette to set the signal in β II record mode.
- 2) Confirm that this unit is in Super Beta mode.
- 3) Confirm that the signal level is $430 \pm 30\text{mVp-p}$.

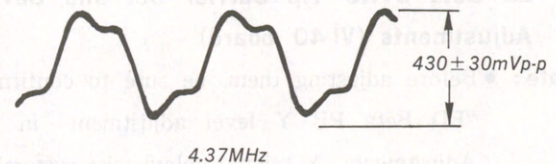


Fig. 8-38. Normal Beta Y Signal REC current Check

8-4-4. Chroma Signal System Adjustments

1. 3.58MHz VXO Adjustment (VI-40 board)

Mode	Playback
Signal	Alignment tape β II color bar
Measurement point	CN109 pin ④ (FSC)
Measurement equipment	Frequency counter
Adjustment element	RV402
Specified value	$3579545 \pm 10\text{Hz}$

[Adjustment method]

- 1) Adjust to $3579545 \pm 10\text{Hz}$ with RV402.

2. AFC VCO Adjustment (VI-40 board)

Mode	Record or E-E
Signal	Color bar
Measurement point	IC401 pin ⑫
Measurement equipment	Digital voltmeter
Adjustment element	RV403
Specified value	$4.41 \pm 0.05\text{Vdc}$

[Adjustment method]

- 1) Adjust to $4.41 \pm 0.05\text{Vdc}$ with RV403.
- 2) Playback the alignment tape color bar to confirm that the hue is normal on the monitor TV.
- 3) If the level does not satisfy the Specification, adjust RV403 and 1) and 2).

3. 4.27MHz Carrier Balance Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	IC401 pin ③
Measurement equipment	Oscilloscope
Adjustment element	RV401
Specified value	Minimize the 4.27MHz component.

[Adjustment method]

- 1) Minimize the 4.27MHz component with RV401.

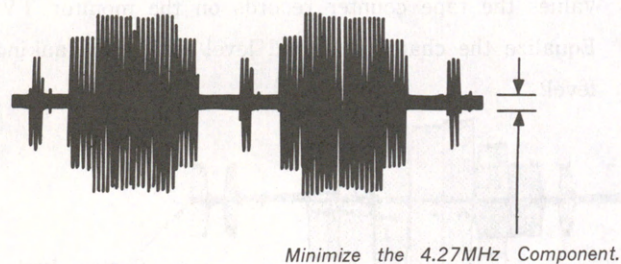


Fig. 8-39. 4.27MHz carrier balance adjustment

4. Chroma PEAK ACC Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	YF-2 board (IC601) pin ②
Measurement equipment	Oscilloscope
Adjustment element	RV602
Specified value	$2.1 \pm 0.1V_{p-p}$

[Adjustment method]

- 1) Adjust to $2.1 \pm 0.1V_{p-p}$ with RV602.

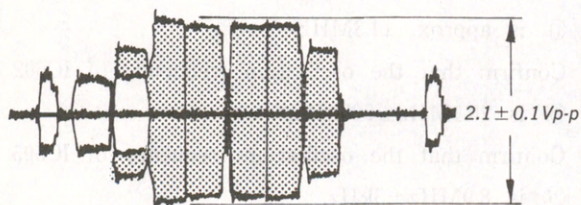


Fig. 8-40 Chroma PEAK ACC Adjustment

5. Chroma Signal REC Current Adjustment (VI-40 board)

Mode	E-E
Signal	Color bar
Measurement point	YF-2 board (IC601) pin ③
Measurement equipment	Oscilloscope
Adjustment element	RV601
Specified value	$220 \pm 10mV_{p-p}$

Note: Prepare a filter as shown below for the measurement.

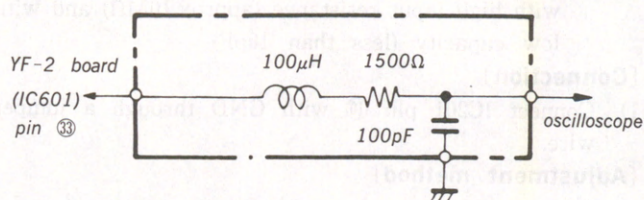


Fig. 8-41.

[Adjustment method]

- 1) Insert an ED Beta cassette.
- 2) Adjust with RV601 so that the "Cyan" level becomes $220 \pm 10mV_{p-p}$.

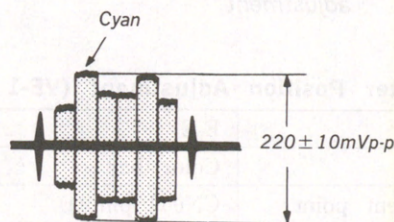


Fig.8-42. Chroma Signal REC current adjustment

8-4-5. Character Insertion Circuit Adjustment

1. Character Generator SYNC Signal AFC Adjustment (VE-1 board)

Mode	E-E
Signal	Arbitrary
Measurement point	IC201 pin ⑥
Measurement equipment	Frequency counter
Adjustment element	RV200
Specified value	$15.75 \pm 2.00\text{kHz}$

Note: The counter must be connected through a probe with high input resistance (approx. $10\text{M}\Omega$) and with low capacity (less than 10pF).

[Connection]

- 1) Connect IC201 pin ⑩ with GND through a jumper wire.

[Adjustment method]

- 1) Adjust to $15.75 \pm 2.00\text{kHz}$ with RV200.

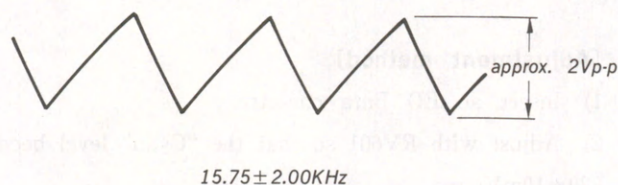


Fig. 8-43. Character generator SYNC Signal AFC adjustment

2. Character Position Adjustment (VE-1 board)

Mode	E-E
Signal	Color bar
Measurement point	CN009 pin ①
Measurement equipment	Oscilloscope
Adjustment element	CV300
Specified value	$10\mu\text{sec}$

[Adjustment method]

- 1) Press the DATA SCREEN button to display the values the tape counter records (hour, minute, second and frame) on the monitor TV. (The value the counter indicates in the lowest digit must not be 1.)
- 2) Adjust to $10\mu\text{sec}$ with CV300.

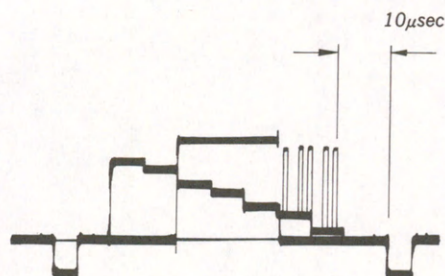


Fig. 8-44. Character position adjustment

3. Character Chroma Clamp Level Adjustment (VE-1 board)

Mode	E-E
Signal	Color bar
Measurement point	CN009 pin ③
Measurement equipment	Oscilloscope
Adjustment element	RV201
Specified value	The character signal level shall equal to the blanking level.

[Adjustment method]

- 1) Press the DATA SCREEN button to display the values the tape counter records on the monitor TV.
- 2) Equalize the character signal level with the blanking level.

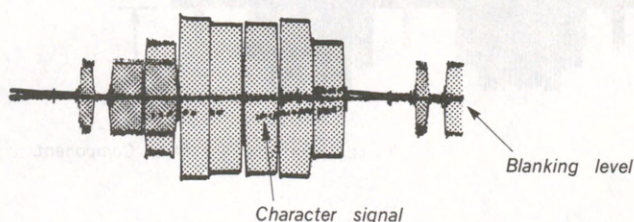


Fig. 8-45. Character chroma clamp level adjustment

8-4-6. Digital System Adjustments

1. Crystal Oscillation Frequency Check (DI-6 board)

Mode	E-E
Signal	Arbitrary
Measurement equipment	Frequency counter

Note: The counter must be connected through a probe with high input resistance (approx. $10\text{M}\Omega$) and with low capacity (Less than 10pF)

[Checking method]

- 1) Confirm that the oscillation frequency of IC001 pin ⑪ is approx. 14.3MHz .
- 2) Confirm that the oscillation frequency of IC602 pin ⑥ is $20.1\text{MHz} \pm 200\text{kHz}$.
- 3) Confirm that the oscillation frequency of IC505 pin ⑳ is $8.0\text{MHz} \pm 5\text{kHz}$.

2. PLL Oscillation Frequency Check (DI-6 board)

Mode	Playback + flash motion
Signal	Alignment tape color bar
Measurement point	IC602 pin ④
Measurement equipment	Frequency counter
Specified value	$10.070 \pm 0.005\text{MHz}$

[Checking method]

- 1) Confirm that the frequency is $10.070 \pm 0.005\text{MHz}$

3. Decoder OSC Freerun Frequency Adjustment (DI-6 board)

Mode	E-E
Signal	Not issued
Measurement point	IC001 pin ⑮
Measurement equipment	Frequency counter
Adjustment element	CT003
Specified value	$3579545 \pm 20\text{Hz}$

[Connection]

- 1) Connect IC001 pins ③ and ⑤ with GND through jumper wires.

Note: The counter must be connected through a buffer AMP. (oscilloscope, etc.) with high input resistance (approx. $10\text{M}\Omega$) and with low capacity (less than 10pF).

[Adjustment method]

- 1) Adjust to $3579545 \pm 20\text{Hz}$ with CT003.

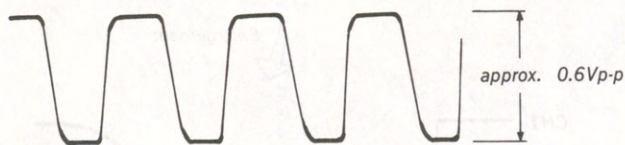


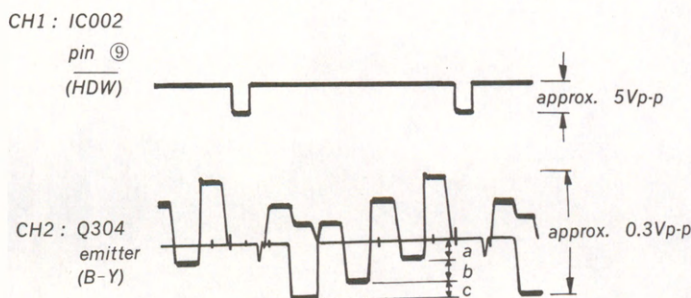
Fig. 8-46.

4. Decoder Hue Adjustment (DI-6 board)

Mode	E-E
Signal	Color bar
Measurement point	CH1 : IC002 pin ⑨ (HDW) CH2 : Emitter Q304(B-Y)
Measurement equipment	Oscilloscope
Adjustment element	RV003 (TINT)
Specified value	Refer to Fig.8-47.

[Adjustment method]

- 1) Equalize the three differences in level a, b, and c with one another, using RV003.



Equalize the differences in level a, b, and c with one another.

Fig. 8-47. Decoder tint adjustment

5. A/D Y Level Adjustment (DI-6 board)

Mode	E-E
Signal	Color bar
Measurement point	IC505 pin ⑮
Measurement equipment	Oscilloscope
Adjustment element	RV201
Specified value	$1.60 \pm 0.05\text{Vp-p}$

[Adjustment method]

- 1) Adjust with RV201 so that the video signal level between the white (100%) level and the pedestal level becomes $1.60 \pm 0.05\text{Vp-p}$.

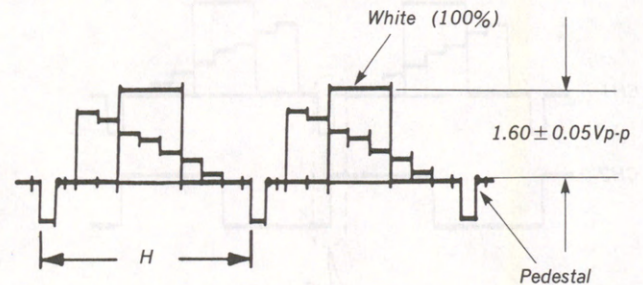


Fig. 8-48. A/D Y level adjustment

6. A/D REF Voltage Adjustment (DI-6 board)

Mode	E-E
Signal	Arbitrary
Measurement point	Emitter Q502
Measurement equipment	Digital voltmeter
Adjustment element	RV501
Specified value	$3.00 \pm 0.05\text{Vdc}$

[Adjustment method]

- 1) Adjust to $3.00 \pm 0.05\text{Vdc}$ with RV501.

7. PLL Lock Voltage Adjustment (DI-6 board)

Mode	E-E + flash motion
Signal	Color bar
Measurement point	IC601 pin ⑦
Measurement equipment	Oscilloscope (DC range)
Adjustment element	LV601
Specified value	$4.5 \pm 0.2\text{Vdc}$

[Adjustment method]

- 1) Adjust to $4.5 \pm 0.2\text{Vdc}$ with LV601.

8. PLL Lock Phase SEG Adjustment (DI-6 board)

Mode	E-E+flash motion
Signal	Color bar
Measurement point	CH1 : CN001 pin ① (Y IN) CH2 : IC603 pin ⑪ (W HD)
Measurement equipment	Oscilloscope
Adjustment element	RV601
Specified value	$1.55 \pm 0.05 \mu\text{sec}$

[Adjustment method]

- 1) Adjust to $1.55 \pm 0.05 \mu\text{sec}$ with RV601.

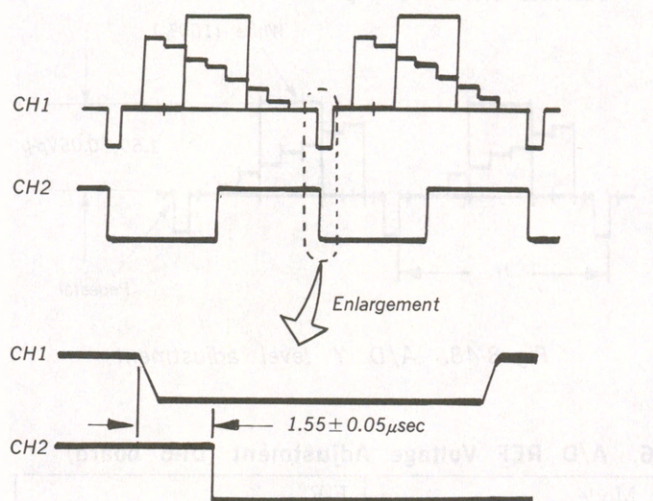


Fig. 8-49. PLL lock phase SEG adjustment

9. BFP Position Adjustment (DI-6 board)

Mode	E-E+flash motion
Signal	Alignment tape color bar
Measurement point	CH1 : IC002 pin ⑨ CH2 : IC503 pin ⑤
Measurement equipment	Oscilloscope
Adjustment element	RV502
Specified value	$5.0 \pm 0.1 \mu\text{sec}$

[Adjustment method]

- 1) Adjust to $5.0 \pm 0.1 \mu\text{sec}$ with RV502.

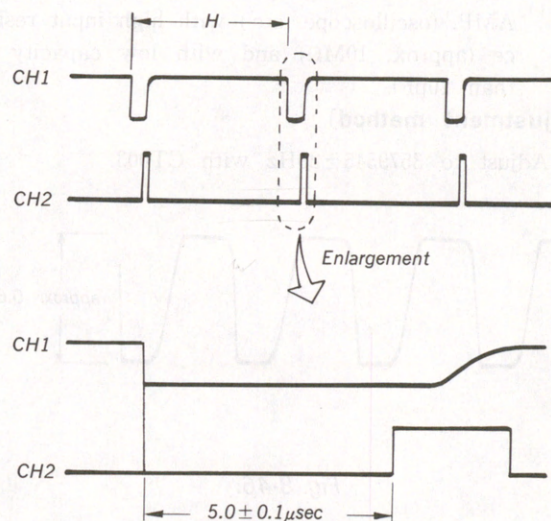


Fig. 8-50. BFP position adjustment

10. AFC Adjustment (DI-6 board)

Mode	E-E+flash motion
Signal	Color bar
Measurement point	CH1 : CN001 pin ① (Y IN) CH2 : IC603 pin ⑪ (WHD)
Measurement equipment	Oscilloscope
Adjustment element	RV001
Specified value	$1.55 \pm 0.05 \mu\text{sec}$

[Adjustment method]

- 1) Adjust to $1.55 \pm 0.05 \mu\text{sec}$ with RV001.

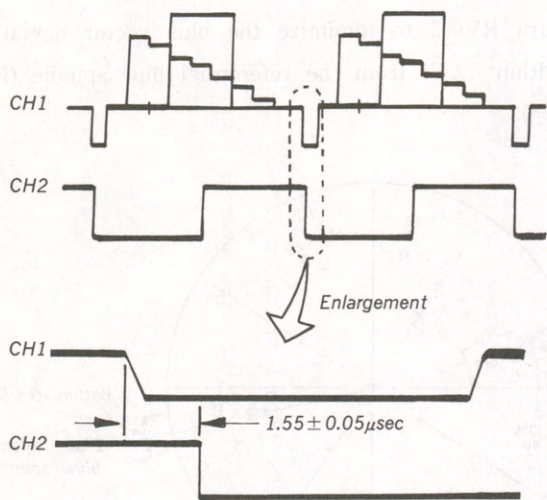


Fig. 8-51. AFC adjustment

11. Encoder Carrier Balance Adjustment (DI-6 board)

Mode	E-E+flash motion
Signal	Color bar
Measurement point	Video output 1 or 2
Measurement equipment	Oscilloscope
Adjustment element	RV102 (BAL-B) RV104 (BAL-R)
Specified value	Minimize the residual carrier component

[Adjustment method]

- 1) Turn RV102 and RV104 alternately to minimize the residual carrier component of the white (100%) portion.

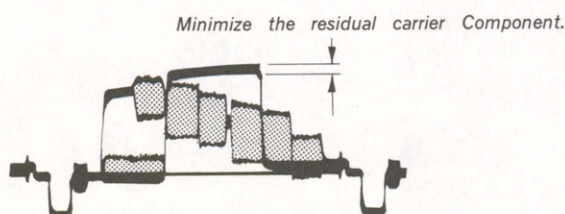


Fig. 8-52. Encoder carrier balance adjustment

12. Chroma Level and Burst Level Adjustment (DI-6 board)

Mode	E-E+flash motion
Signal	Color bar
Measurement point	CN002 pin ③
Measurement equipment	Oscilloscope
Adjustment element	RV304 (C.LEVEL) RV101 (BURST)
Specified value	Chroma level : $630 \pm 10 \text{mVp-p}$ Burst level : $290 \pm 10 \text{mVp-p}$

[Adjustment method]

- 1) Adjust with RV301 so that the chroma level becomes $630 \pm 10 \text{mVp-p}$.
- 2) Adjust with RV101 so that the burst level becomes $290 \pm 10 \text{mVp-p}$.

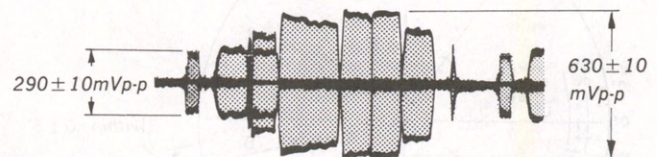


Fig. 8-53. Chroma level and burst level adjustment

13. Write Clock Adjustment (DI-6 board)

Mode	CUE or REVIEW
Signal	Color bar
Measurement point	IC605 pin ⑩
Measurement equipment	Frequency counter
Adjustment element	CT4 (mounted on IC605)
Specified value	$10.07 \pm 0.01 \text{MHz}$

[Adjustment method]

- 1) Adjust to $10.07 \pm 0.01 \text{MHz}$ with CT4.

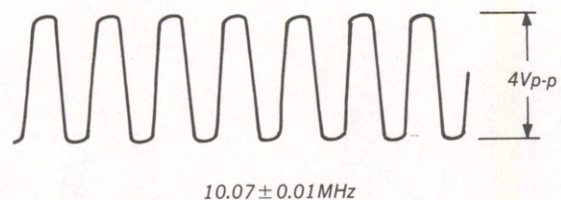


Fig. 8-54. Write clock adjustment

14. E-E HUE Adjustment (UE-1 board)

Mode	E-E+flash motion
Signal	Color bar
Measurement point	Video output 1 or 2
Measurement equipment	Vector scope
Adjustment element	RV002
Specified value	Minimize blue vector deviation

[Adjustment method]

- 1) Turn RV002 to minimize the blue vector deviation (within $0 \pm 5^\circ$) from the referential blue spindle (Fig. 8-55).

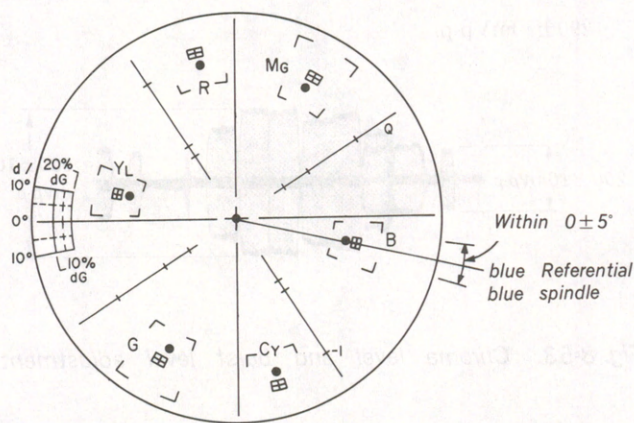


Fig. 8-55.

15. PB HUE Adjustment (UE-1 board)

Mode	PB+flash motion
Signal	Color bar
Measurement point	Video output 1 or 2
Measurement equipment	Vector scope
Adjustment element	RV003
Specified value	Minimize blue Vector deviation

[Adjustment method]

- 1) Record the color bar signal and playback the recorded portion.
- 2) Turn RV003 to minimize the blue vector deviation (within $0 \pm 5^\circ$) from the referential blue spindle (Fig. 8-56).

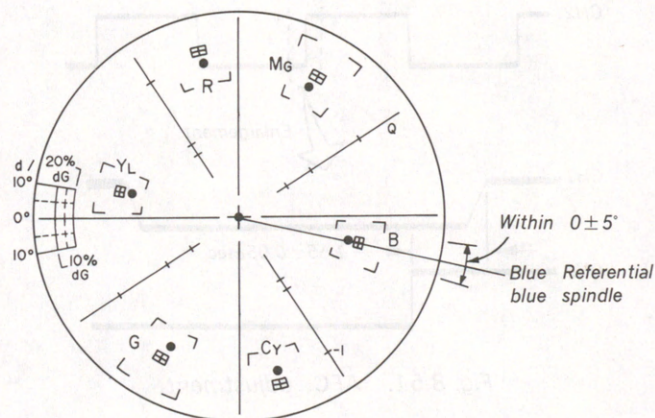


Fig. 8-56.

8-5. AUDIO SYSTEM ADJUSTMENTS

- For this adjustment, use a normal Beta cassette (dynamicron standard types L125~L500) unless otherwise specified, and make the adjustment in β II mode. Then, use KR5-1V as an alignment tape.
- Adjust both LCH and RCH

[Connection]

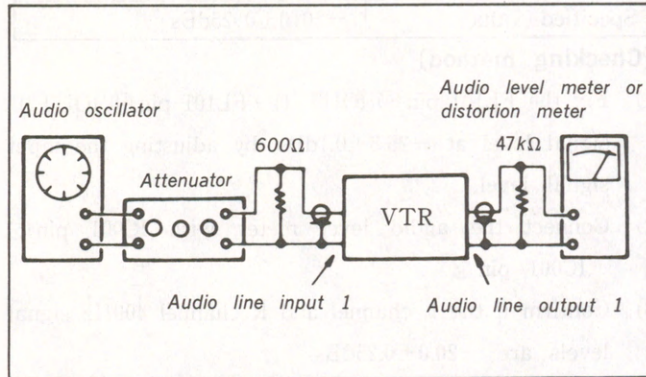


Fig. 8-57

8-5-1. BETA HiFi Audio System Adjustment

Unless otherwise specified, set the following switches and knob as follows:

- INPUT SELECT switch.....LINE 1
 AUDIO MONITOR switch.....BETA HI-FI
 MPX FILTER switch.....OFF
 REC LEVEL knob.....center click position

[Adjusting Sequence]

1. REF 150kHz check
2. Carrier frequency check
3. IS pulse check
4. MPX filter check
5. SNR REF adjustment
6. PB to adjustment
7. PB level adjustment
8. REC GAIN adjustment
9. PB channel balance adjustment
10. PB level check
11. E-E level check
12. Overall level characteristics, distortion rate and S/N check
13. Overall frequency characteristics check

1. REF 150kHz Check (AU-38 board)

Mode	E-E
Measurement Point	IC003 pin ④
Measurement Equipment	Frequency counter
Specified Value	149473±10Hz

[Checking method]

- 1) Confirm that the frequency satisfies the specified value.

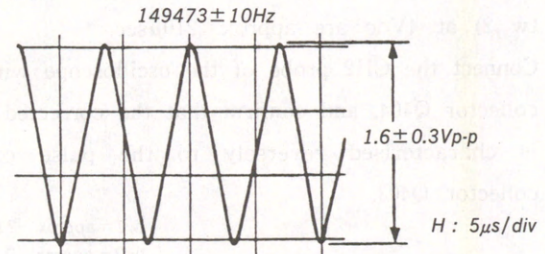


Fig. 8-58 REF 150kHz check

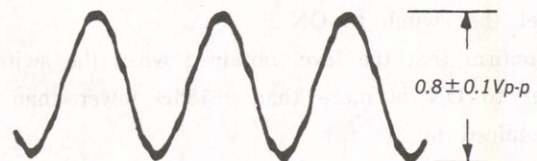
2. Carrier Frequency Check (AU-38 board)

Mode	Record
Measurement Equipment	Frequency counter
1.83MHz check	
Measurement point	IC003 pin ⑨
Specified value	1.83±0.1MHz
1.38MHz check	
Measurement point	IC003 pin ③
Specified value	1.38±0.1MHz
1.53MHz check	
Measurement point	IC003 pin ⑥
Specified value	1.53±0.1MHz
1.68MHz check	
Measurement point	IC003 pin ⑪
Specified value	1.68±0.1MHz

Note: Set the REC LEVEL knob to minimum.

[Checking method]

- 1) Connect each counter with each measured point.
- 2) Confirm that each frequency satisfies each specified value.



- IC003⑨ 1.83±0.01MHz
 IC003③ 1.38±0.01MHz
 IC003⑥ 1.53±0.01MHz
 IC003⑪ 1.68±0.01MHz

Fig. 8-59 Carrier frequency check

3. IS Pulse Check (AU-38 board)

Mode	Record or playback
Signal	Arbitrary
Measurement point	CH1: CN012 pin ① (VPG) CH2: Collector Q403
Measurement equipment	Oscilloscope (DC range)

[Checking method]

- 1) Confirm that the corrected pulse widths (tw 1 and tw 2) at 4Vdc are approx. 210μsec.
- 2) Connect the CH2 probe of the oscilloscope with the collector Q404, and confirm that the corrected pulse is characterised reversely to the pulse of the collector Q403.

tw1=approx. 210μsec
tw2=approx. 210μsec

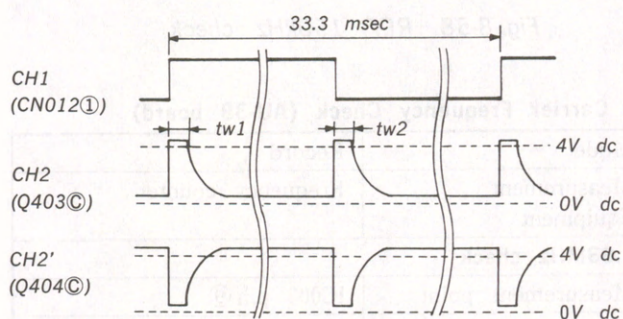


Fig. 8-60 IS pulse check

4. MPX Filter Check (AU-38 board)

Check the filters in both L and R channels.

Mode	E-E
Signal	15.73kHz, -10dBs
Measurement point	Audio line output 1
Measurement equipment	Audio level meter

[Checking method]

- 1) Set the REC LEVEL knob to center click.
- 2) Read the 15.73kHz signal level obtained when the MPX FILTER switch is set to OFF (approx. -10dBs).
- 3) Set the switch to ON.
- 4) Confirm that the level obtained when the switch is set to ON is more than -18dB lower than that obtained in 2).

5. SNR REF Adjustment (AU-38 board)

< > Parenthesized are the adjustment elements for the R channel.

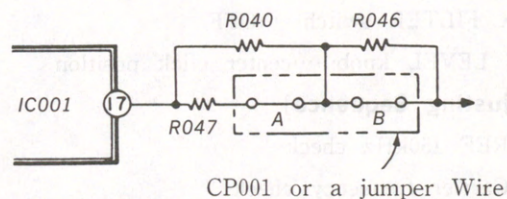
Mode	E-E
Input signal	400Hz
Measurement point	IC001 pin ⑤ <IC001 pin ③⑧>
Measurement equipment	Level meter
Specified value	-20.0±0.25dBs

[Checking method]

- 1) Fix the FL101 pin ⑤ (OUT 1) <FL101 pin ① (OUT2)> signal level at -25.8±0.1dBs, by adjusting the input signal level.
- 2) Connect the audio level meter with IC001 pin ⑤ <IC001 pin ③⑧> .
- 3) Confirm if the L channel and R channel 400Hz signal levels are -20.0±0.25dBs.
- 4) If not, make the following adjustment.

[Adjustment method]

- 1) Disconnect CP001.
- 2) Short-circuit the parts A (on R047's side) and B (on R046's side).
- 3) Measure the 400Hz signal level, and open A or B according to it. as shown in Fig. 8-61.



400Hz signal level (dBs)	A	B
-19.9~-20.1	Short	Short
-19.7~-19.9	Short	Open
-19.5~-19.7	Open	Short
-19.3~-19.5	Open	Open

Fig. 8-61

6. PB fo Adjustment (AU-38 board)

< > Parenthesized are the adjustment elements for the R channel.

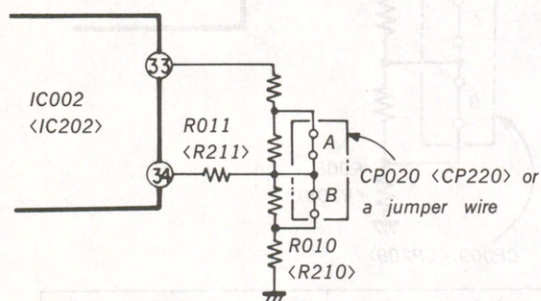
Mode	Playback
Signal	A tape in which a telecast is recorded is Beta HIFI through no sound signal
Measurement point	IC002 pin ②③ <IC202 pin ②③>
Measurement equipment	Digital voltmeter
Specified value	DC output voltage: $2.0 \pm 0.35\text{Vdc}$

[Checking method]

- 1) Connect the digital voltmeter with the measured point.
- 2) Confirm if the voltage is $2.0 \pm 0.35\text{Vdc}$.
- 3) If not, make the following adjustment.

[Adjustment method]

- 1) Disconnet CP020 <CP220> .
- 2) Short-circuit the parts A and B.
- 3) Check the PB fo, and open A or B according to it, as shown in Fig. 8-62.



DC output voltage (Vdc)	A	B
1.1~1.65	Open	Short
1.65~2.35	Short	Short
2.35~2.9	Short	Open

Fig. 8-62

7. PB Level Adjustment (AU-38 board)

< > Parenthesized are the adjustments elements for the R channel.

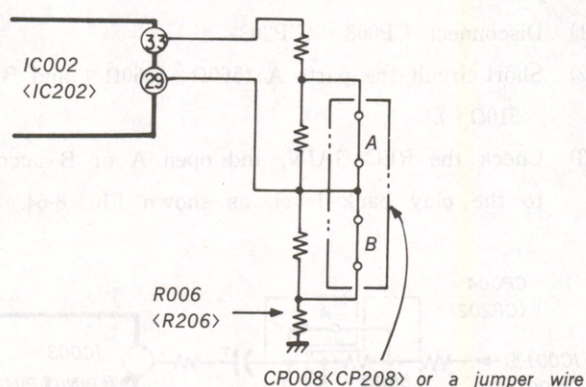
Mode	Playback
Signal	Part of the alignment tape (KR5-1V) in which a telecast is recorded in BETA HIFI
Measurement point	IC001 pin ③ <IC001 pin ④⑤>
Measurement equipment	Audio level meter
Specified value	$-20.0 \pm 0.3\text{dBs}$

[Checking method]

- 1) Connect the meter with IC001 pin ③ <IC001 pin ④⑤> .
- 2) Confirm if the playback level is $-20.0 \pm 0.3\text{dBs}$.
- 3) If not, make the following adjustment.

[Adjustment method]

- 1) Disconnect CP008 <CP208> .
- 2) Short-circuit the parts A and B.
- 3) Measure the signal level, and open A or B according to it, as shown Fig. 8-63.



Playback level (dBs)	A	B
More than -19.75 <More than -19.3 >	Open	Short
$-19.3 \sim -19.75$	Open	Open
$-19.75 \sim -20.25$ < $-19.75 \sim -20.2$ >	Short	Short
Less than -20.25 <Less than -20.2 >	Short	Open

Fig. 8-63

8. REC GAIN Adjustment (AU-38 board)

Note: Before adjusting REC GAIN, be sure to make "7. Play back level adjustment" has been already made.

< > Parenthesized are the adjustment elements for the R channel.

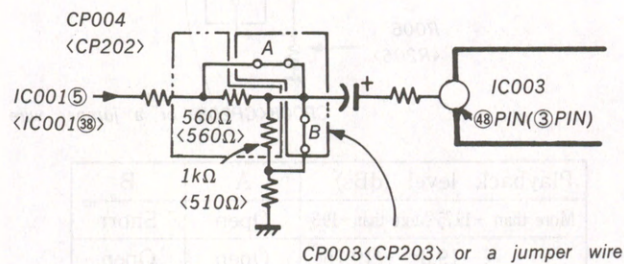
Mode	Record and playback
Signal	400Hz
Measurement point	IC001 pin ③ <IC001 pin ④>
Measurement equipment	Audio level meter
Specified value	$-20.0 \pm 0.6\text{dBs}$

[Checking method]

- 1) Adjust the input signal level to fix the FL101 pin ⑤ (OUT1) <FL101 pin ⑪ (OUT2)> signal level at $-25.8 \pm 0.1\text{dBs}$.
- 2) Record.
- 3) Playback the recorded tape portion.
- 4) Confirm if the playback level satisfies the specified value.
- 5) If not, make the following adjustment.

[Adjustment method]

- 1) Disconnect CP003 <CP203> .
- 2) Short-circuit the parts A (560Ω < 560Ω >) and B ($1k\Omega$ < 510Ω >).
- 3) Check the REC GAIN, and open A or B according to the play back level, as shown Fig. 8-64.



Playback level (dBs)	A	B
More than -19.4	Open	Short
$-19.4 \sim -20.6$	Short	Short
Less than -20.6	Short	Open

Fig. 8-64

9. PB Channel Balance Adjustment (AU-38 board)

< > Parenthesized are the adjustment elements for the R channel.

Mode	Record and playback
Input signal	10kHz, -10dBs
Measurement point	CH1: Sound output 1 (L) <Sound output 1 (R)> CH2: CN012 pin ① (VPG)
Measurement equipment	Oscilloscope

[Adjustment method]

- 1) Disconnect CP009 <CP209> .
- 2) Set REC LEVEL to center click position to record the 10kHz signal for more than a minute.
- 3) Playback the recorded tape portion.
- 4) Short-circuit or open the part A or B to minimize the difference in level between the channels A and B.

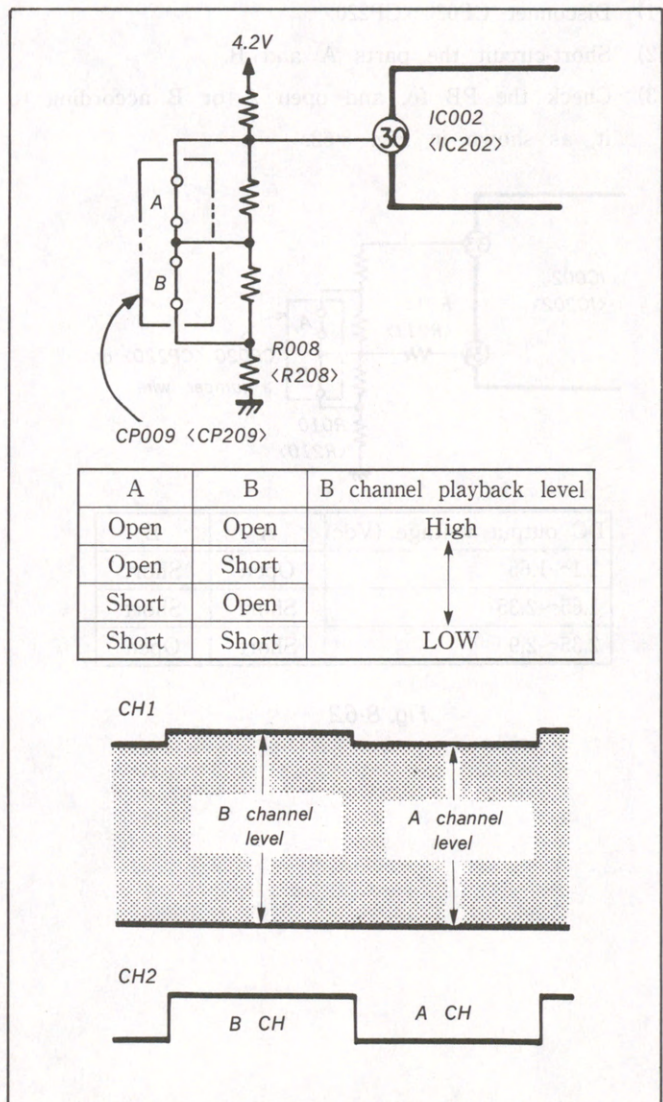


Fig. 8-65

10. PB Level Check

Check the playback level in both L and R channels.

Mode	Playback
Signal	Part of the alignment tape (KR5-1V) in which a telecast is recorded in BETA HIFI
Measurement point	Audio line output 1
Measurement equipment	Audio level meter
Specified value	$-10 \pm 2\text{dB}$ in both L and R

[Checking method]

- 1) Confirm that the level is $-10 \pm 2\text{dB}$ in both L and R.

11. E-E Level Check

Check the E-E level in both L and R channels.

Mode	E-E
Signal	400Hz and -10dB s, entered into the audio line input terminal
Measurement point	Audio line output 1
Measurement equipment	Audio level meter
Specified value	$-10 \pm 2\text{dB}$ s

[Checking method]

- 1) Set the REC LEVEL knob to center click position.
- 2) Confirm that the E-E output level satisfy the specified value.
- 3) Confirm that peak program meter indicates the **B** level.
- 4) Confirm that the difference in level between L and R is less than 2dB.

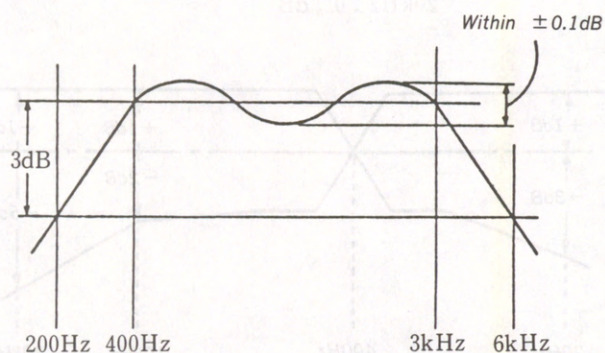
12. Overall Level Characteristics, Distortion Rate and S/N Check

Check them in both L and R channels.

Mode	Record and playback
Signal	400Hz and -10dB s, entered into the audio line input 1
Measurement point	Audio line output 1
Measurement equipment	Audio level meter and distortion meter
Specified value	$-10 \pm 2\text{dB}$ s

[Checking method]

- 1) Turn the REC LEVEL knob to fix the audio line output level at $-10 \pm 0.5\text{dB}$ s in both L and R.
- 2) Record (the 400Hz signal).
- 3) Short-circuit the audio line input terminal to enter no signal.
- 4) Record (non-signal recording).
- 5) Playback the 400Hz signal recorded portion.
- 6) Confirm that the playback level is $-10 \pm 2\text{dB}$ s and that the difference in level between L and R is less than 2dB.
- 7) Confirm that the distortion rate is less than 0.3% (with BPF (Fig. 8-66) used)
(But approx. 0.5% with BPF not used)
- 8) Playback the non-signal recorded portion, and confirm that the difference between the 400Hz signal playback level and the non-signal playback level is more than 65dB.
(*with an A curve filter used)



The fCL of less than 200Hz is rated at 12dB/Oct.

The fCH of less than 6kHz is rated at 12dB/Oct.

Fig. 8-66

13. Overall Frequency Characteristics Check

Check the characteristics in both L and R channels.

Mode	Record and playback
Signal	Enter the following audio signals one after another into the audio line input 1 terminal. 1. 400Hz, -20dBs 2. 20Hz, -20dBs 3. 10kHz, -20dBs 4. 20kHz, -20dBs
Measurement point	Audio line output 1
Measurement equipment	Audio level meter
Specified value	Playback level of each signal described based on the 400Hz signal playback level. 20Hz : $0 \pm \frac{1}{3}$ dB 10kHz : $0 \pm \frac{1}{2}$ dB 20kHz : $0 \pm \frac{1}{3}$ dB

Note : Never fail to set the MPX FILTER switch to OFF.

[Checking method]

- 1) Set the REC level knob to center click position.
- 2) Record the above four signals one after another for approx. 10 seconds each.
- 3) Playback the portion which has been recorded.
- 4) Confirm that the playback level of each signal described based on the 400Hz signal playback level satisfies each of the following specified values.

20Hz : $0 \pm \frac{1}{3}$ dB

10kHz : $0 \pm \frac{1}{2}$ dB

20kHz : $0 \pm \frac{1}{3}$ dB

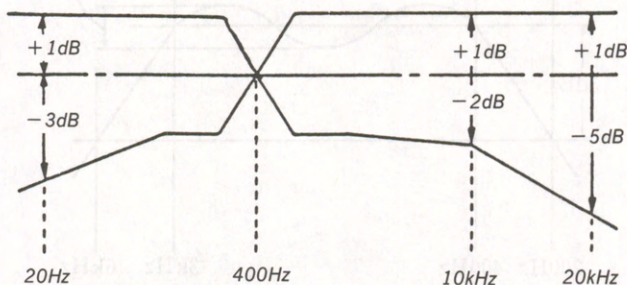


Fig. 8-67

8-5-2 Normal Audio System Adjustments

- Unless otherwise specified, adjust the system in β II mode. And prepare a normal Beta cassette tape (dynamic standard types, L125 to L500) for adjusting it.
- Before the adjustment, set the switches as follows:
INPUT SELECT..... LINE 1
AUDIO MONITOR ... NORMAL
TONE HI

[Adjusting Sequence]

1. ACE head adjustment..... Refer to "Mechanism adjustment".
2. PB frequency Characteristics check
3. PB output level check
4. E-E output level check
5. Bias oscillation check
6. Bias trap adjustment
7. REC bias adjustment
8. Audio insert bias adjustment
9. Overall level characteristics and distortion rate check
10. Overall S/N check

1. ACE Head Adjustment

Refer to "Mechanism adjustment".

2. PB Frequency Characteristics Check

Check the characteristics in both L and R channels.

Mode	Playback
Signal	β II 333Hz (monoscope) and 5kHz (RF sweep) in the alignment tape (KR5-1V)
Measurement point	Audio line output 1
Measurement equipment	Audio level meter
Specified value	The 5kHz signal level shall be $0 \pm \frac{2}{3}$ dB as against the 333Hz signal level.

Note : Never fail to set the TONE switch to "HI".

[Checking method]

- 1) Playback the 333Hz and 5kHz signals, and confirm that the 5kHz signal level is $0 \pm \frac{2}{3}$ dB as against the 333Hz signal level.

3. PB Output Level Adjustment (VE-1 board)

Mode	Playback
Signal	β II 333Hz (monoscope) in the alignment tape (KR5-1V)
Measurement point	Audio line output 1
Measurement equipment	Audio level meter
Adjustment element	RV901
Specified value	-31 ± 1 dBs

[Adjustment method]

- 1) Playback the 333Hz signal.
- 2) Adjust with RV901 so that the audio line output level becomes -31 ± 1 dBs.

4. E-E Output Level Check

Mode	E-E
Signal	L, R: 333Hz, -10 dBs
Measurement point	Audio line output 1
Measurement equipment	Audio level meter
Specified value	-10 ± 2 dBs

[Checking method]

- 1) Enter the signals of 333Hz and -10 dBs simultaneously into both L and R channels for the audio line input.
- 2) Confirm that the audio line output level is -10 ± 2 dBs.

5. Bias Oscillation Check (VE-1 board)

Mode	Record
Signal	Not issued
Measurement point	CN902 pin ①
Measurement equipment	Frequency counter and oscilloscope
Specified value	Oscillation frequency: 65 ± 5 kHz Oscillation voltage: 40 ± 3 Vp-p (Normal Beta) 50 ± 3 Vp-p (ED Beta)

Note: The counter must be connected through a probe with low capacity (less than 10pF) and high input resistance (approx. 10M Ω).

[Checking method]

- 1) Insert a normal Beta cassette to set this unit in record mode.
- 2) Confirm that the frequency and the voltage are 65 ± 5 kHz and 40 ± 3 Vp-p, respectively.
- 3) Insert an ED Beta cassette to set this unit in record mode.
- 4) Confirm that the frequency and the voltage are 65 ± 5 kHz and 50 ± 3 Vp-p, respectively.

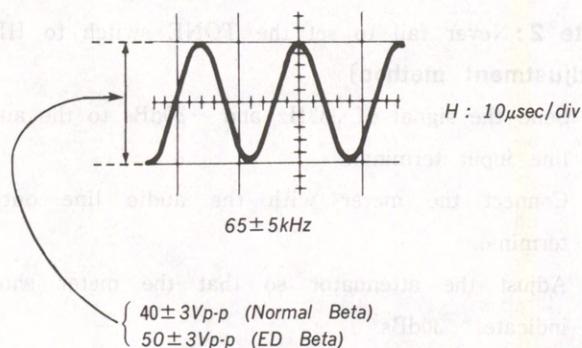


Fig. 8-68

6. Bias Trap Adjustment (VE-1 board)

Mode	Record
Signal	Not issued
Measurement point	TP902
Measurement equipment	Oscilloscope
Adjustment element	LV950
Specified value	Minimize the bias leak

[Adjustment method]

- 1) Turn LV950 to minimize the bias leak (65kHz)

7. REC Bias Adjustment (VE-1 board)

Mode	Record and playback
Signal	333Hz, -30dBs 7kHz, -30dBs
Measurement point	Audio line output 1
Measurement equipment	Audio level meter
Adjustment element	RV802
Specified value	$0 \pm \frac{1}{2}$ dB

Note 1: Be sure to make "2. Playback frequency characteristics check" and "3. Playback output level adjustment" before adjusting the bias.

Note 2: Never fail to set the TONE switch to HI.

[Adjustment method]

- 1) Send the signal of 333Hz and -30dBs to the audio line input terminal.
- 2) Connect the meter with the audio line output terminal.
- 3) Adjust the attenuator so that the meter should indicate -30dBs.
- 4) Record in β II mode.
- 5) Fix the audio line input signal level at 7kHz and record the signal.
- 6) Playback the recorded portion and measure the output level of the 333Hz signal and of the 7kHz signal.
- 7) Confirm that the 7kHz signal playback output level is $0 \pm \frac{1}{2}$ dB as against the 333Hz signal playback level. If not, turn RV802 to repeat 1) to 7).

8. Audio Insert Bias Adjustment (VE-1 board)

Mode	Audio insert
Signal	Arbitrary
Measurement point	CN901 pin ⑤
Measurement equipment	Frequency counter
Adjustment element	LV801
Specified value	(Oscillation frequency read in record mode) ± 1 kHz

[Adjustment method]

- 1) Set this unit in record mode.
- 2) Read the bias oscillation frequency.
- 3) Set this unit in audio insert mode.
- 4) Turn LV801 to equalize the bias oscillation frequency with that read in 2).

9. Overall Level Characteristics and Distortion Rate Check

Mode	Record and playback
Signal	333Hz, -10dBs
Measurement point	Audio line output 1
Measurement equipment	Audio level meter and distortion rate meter
Specified value	Playback level: -10 ± 2 dBs Distortion rate: less than 5.5%

[Checking method]

- 1) Send the audio signals of 333Hz and -10dBs simultaneously to both L and R channels for the audio line input.
- 2) Record.
- 3) Playback the recorded portion.
- 4) Confirm that the playback level is -10 ± 2 dBs.
- 5) Confirm that the distortion rate is less than 5.5%.

10. Overall S/N Check

Mode	Record and playback
Signal	333Hz and -10dBs or not issued
Measurement point	Audio line output 1
Measurement equipment	Audio level meter
Specified value	More than 27dBs

[Checking method]

- 1) Enter the signals of 333Hz simultaneously into both L and R channels for the audio line input, and adjust the attenuator to fix the L channel audio line output level at -10dBs.
- 2) Record.
- 3) Keeping this unit in record mode, stop sending signals (short-circuit the input circuits in both L and R.).
- 4) Playback the recorded portion, and confirm that the difference between the 333Hz signal level and the non-signal level (obtained just after the 333Hz signal is issued) is more than 27dB.

8-6. TUNER SYSTEM ADJUSTMENTS

8-6-1. RF AGC Adjustment
(unit IF901/TU-86 board)

Mode	E-E
Signal	Broad casting TV signal
Adjustment element	VR of unit IF901 (Fig. 8-69)

[Adjustment method]

- 1) Provide the greatest contrast to the monitor TV.
- 2) Turn VR to make it possible to see the snow noise.
- 3) Turn VR in the opposite direction until the noise goes out of sight.
- 4) Receive signal of all channels in turn, and ensure that there is no cross modulation beat, image deformation or snow noise effect.

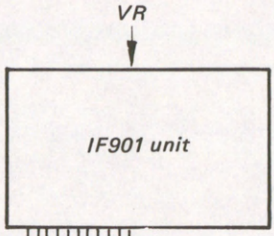


Fig. 8-69

8-6-2. MPX Input Level Adjustment (TU-86 board)

Mode	E-E
Signal	300Hz, 100% MOD (±25 kHz dev) See, Fig.8-70
Measurement point	IC552 Pin ③ (SBX1436)
Measurement equipment	Oscilloscope
Adjustment element	RV103
Specified value	0.70±0.05Vp-p

[Connection]

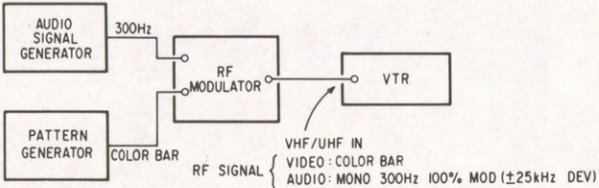


Fig. 8-70

[Adjustment method]

- 1) Adjust with RV103 so that the 300Hz signal level is 0.70±0.05Vp-p.

8-6-3. Separation Adjustment (TU-86 board)

Mode	E-E
Signal	MPX signal: See Table 8-2
Measurement point	HEAD PHONES output or audio line output
Measurement equipment	Headphones or Oscilloscope
Adjustment element	RV06, RV03 (IC552 (SBX-1436))
Specified value	Minimum crosstalk

Signal	Modulation
Stereo Pilot Signal	ON
Main Channel Signal	Lch : 400Hz 30% Rch : 2kHz 30%
Sub-channel Signal	NOISE REDUCTION : ON PREEMPHASIS : ON

Table. 8-2

[Connection]

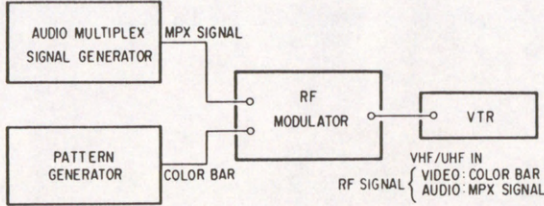


Fig. 8-71

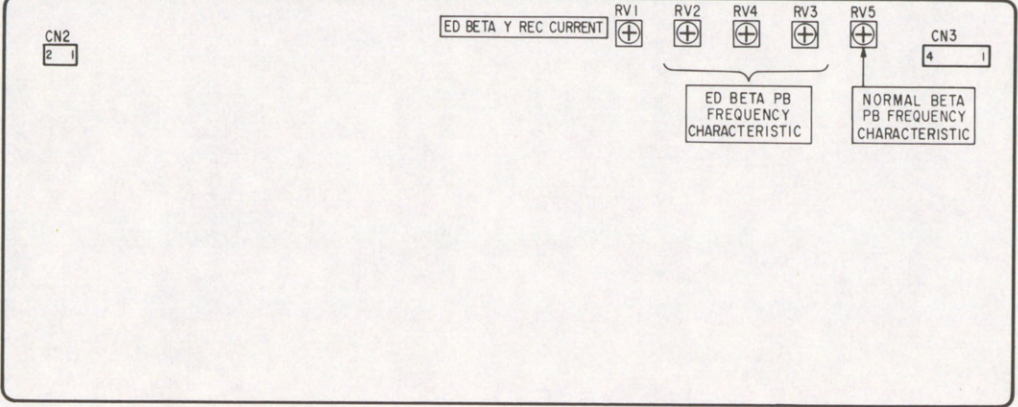
Note: Make adjustments while monitoring either the headphones output or the audio line output.

[Adjustment method]

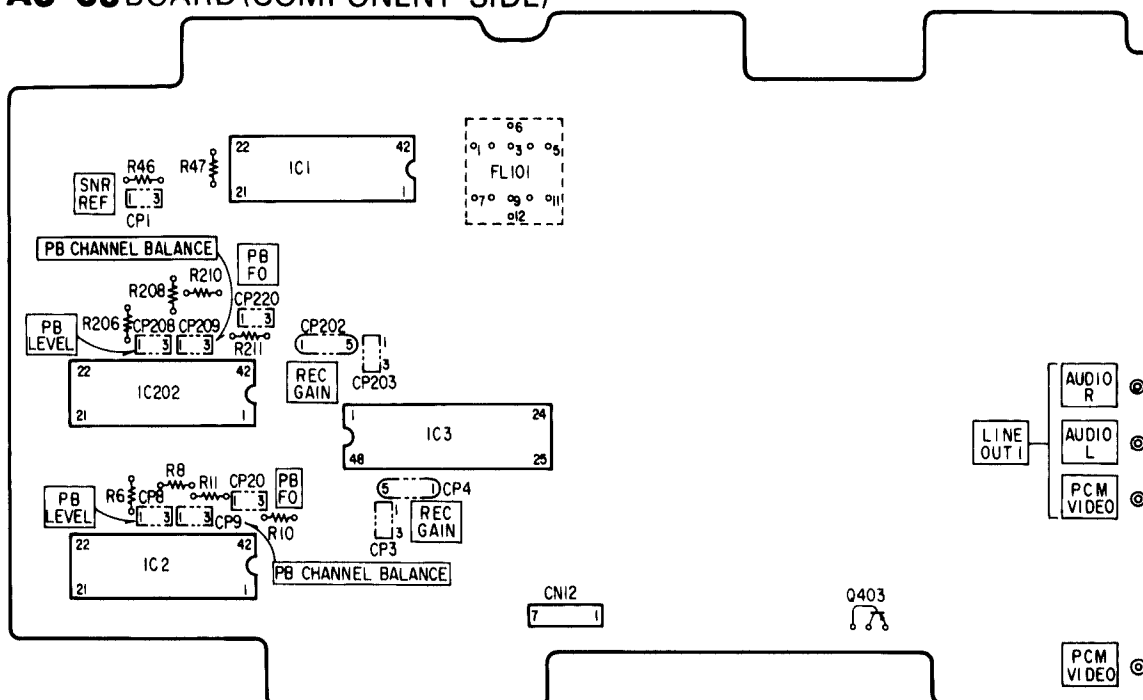
- 1) Set the AUDIO MONITOR selector on the front panel at "L".
- 2) By turning RV06 on IC552 (SBX-1436) minimize the crosstalk component (at 2kHz).
- 3) Set the AUDIO MONITOR selector on the front panel at "R".
- 4) By turning RV03 on IC552 (SBX-1436) minimize the crosstalk component (at 400Hz).

8-7. ADJUSTMENT ELEMENTS LOCATION

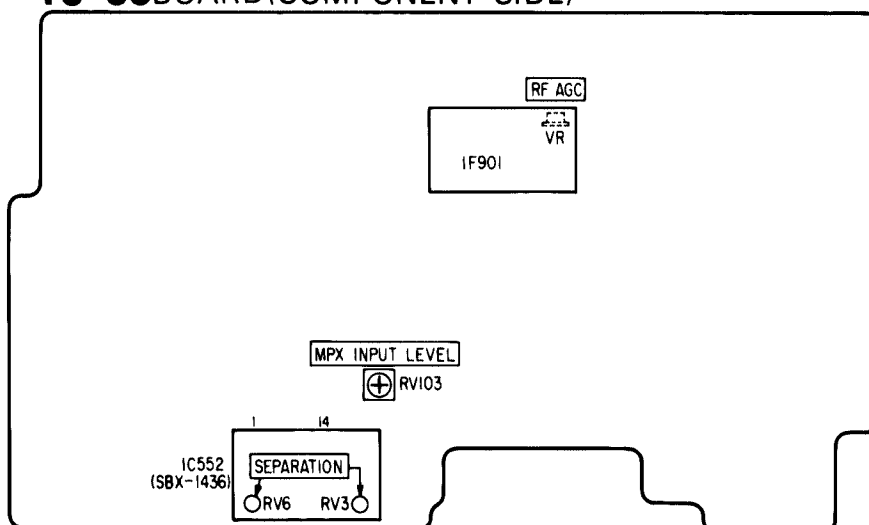
RP-51BOARD(COMPONENT SIDE)



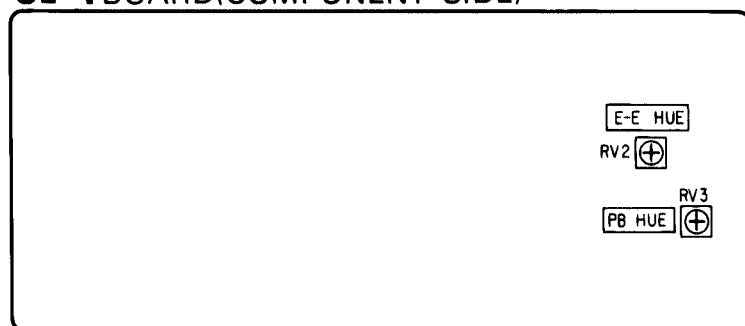
AU-38 BOARD (COMPONENT SIDE)



TU-86 BOARD (COMPONENT SIDE)



UE-1 BOARD (COMPONENT SIDE)



RMT-164

SERVICE MANUAL



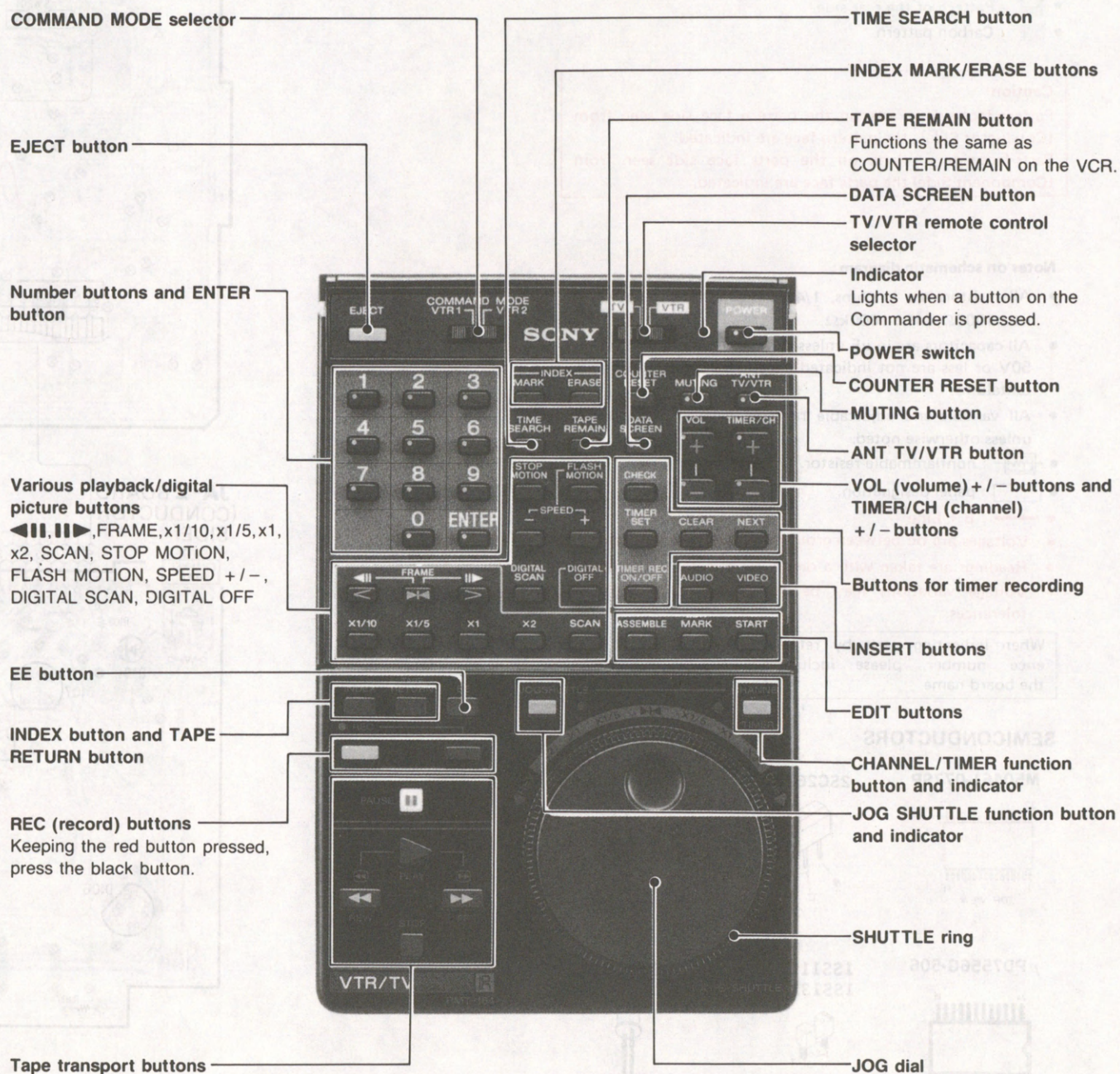
SPECIFICATIONS

Remote control system	Infrared control
Power requirements	4.5 V DC, 3 size AA batteries (IEC designation R6)
Dimensions	Approx. 105 × 40 × 160 mm (w/h/d) (4 1/10 × 1 1/2 × 6 1/4 inches)
Weight	incl. projecting parts and controls Approx. 220 g (8 oz) not incl. batteries

WIRELESS COMMANDER
SONY®

1. LOCATION AND FUNCTION OF PARTS AND CONTROLS

The buttons without explanation have the same function as the buttons on the VCR with the similar name or mark.



2. PRINTED WIRING BOARDS

Notes on printed wiring boards :

- ○ : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ■ : Pattern from the side which enables seeing.
- ■ : Pattern of the rear side.
- ■ : Carbon pattern.

Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.

Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

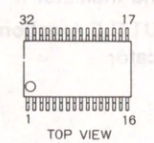
Notes on schematic diagram :

- All resistors are in ohms, 1/4W unless otherwise noted.
k Ω : 1000 Ω , M Ω : 1000k Ω .
- All capacitors are in μ F unless otherwise noted. pF : $\mu\mu$ F.
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
-  : nonflammable resistor.
-  : panel designation.
-  : B + Line
- Voltages are dc between ground and measurement points.
- Readings are taken with a digital multimeter (DC10M Ω).
- Voltage variations may be noted due to normal production tolerances.

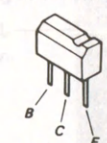
When indicating parts by reference number, please include the board name.

SEMICONDUCTORS

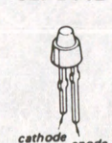
M50461-077SP



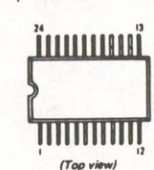
2SC2673



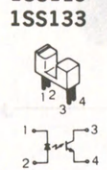
SLP144B



μ PD7556G-506



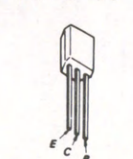
1SS119



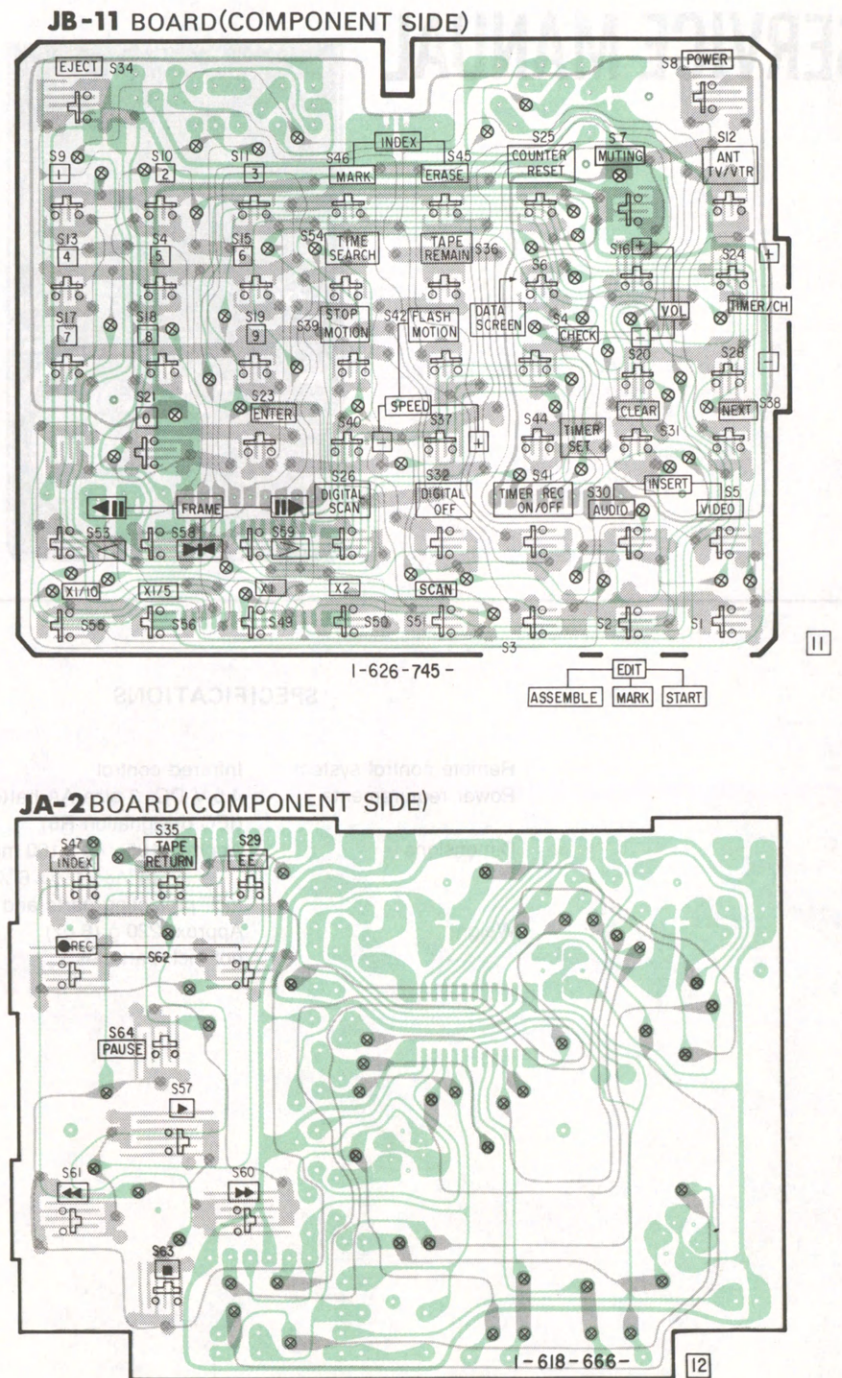
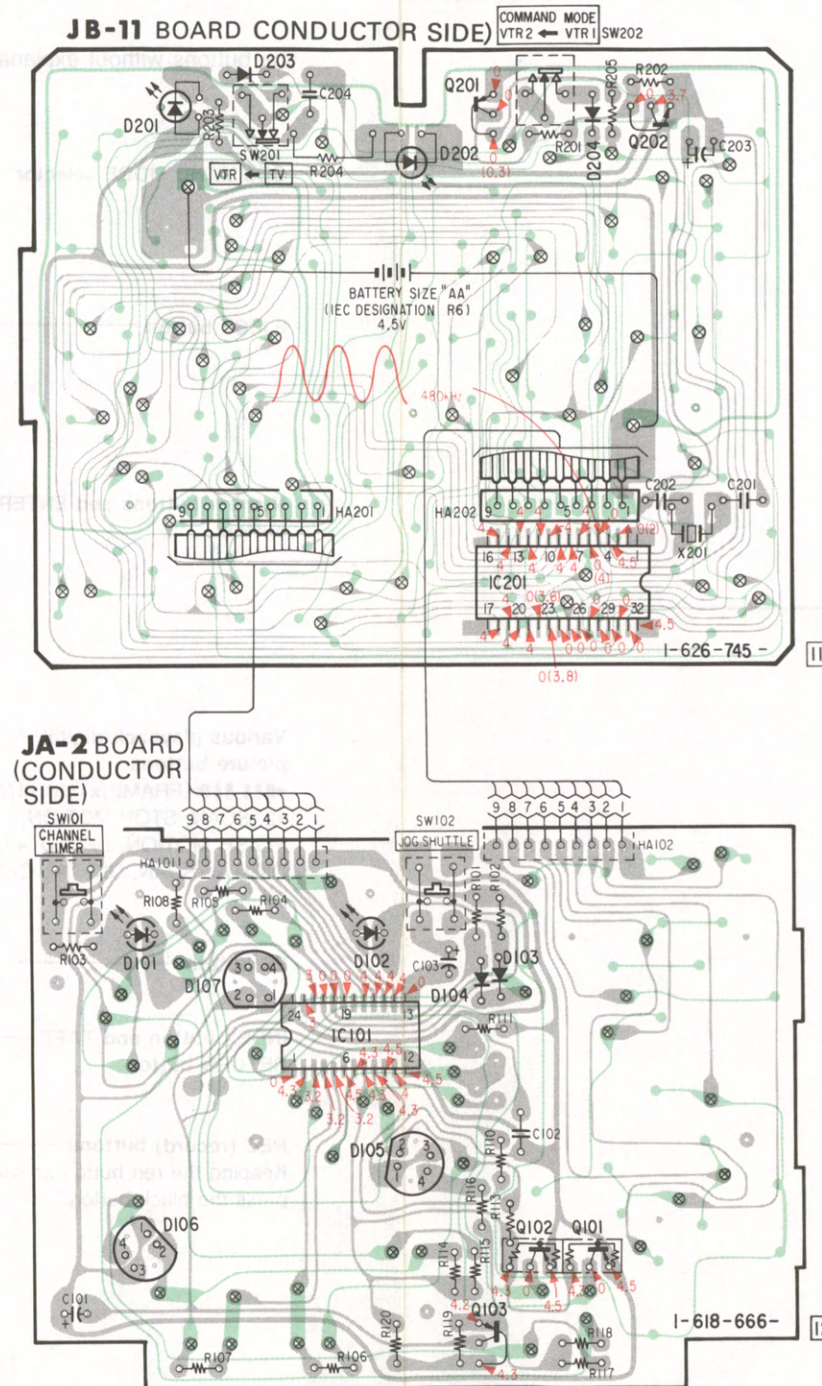
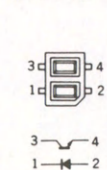
SLR-932A



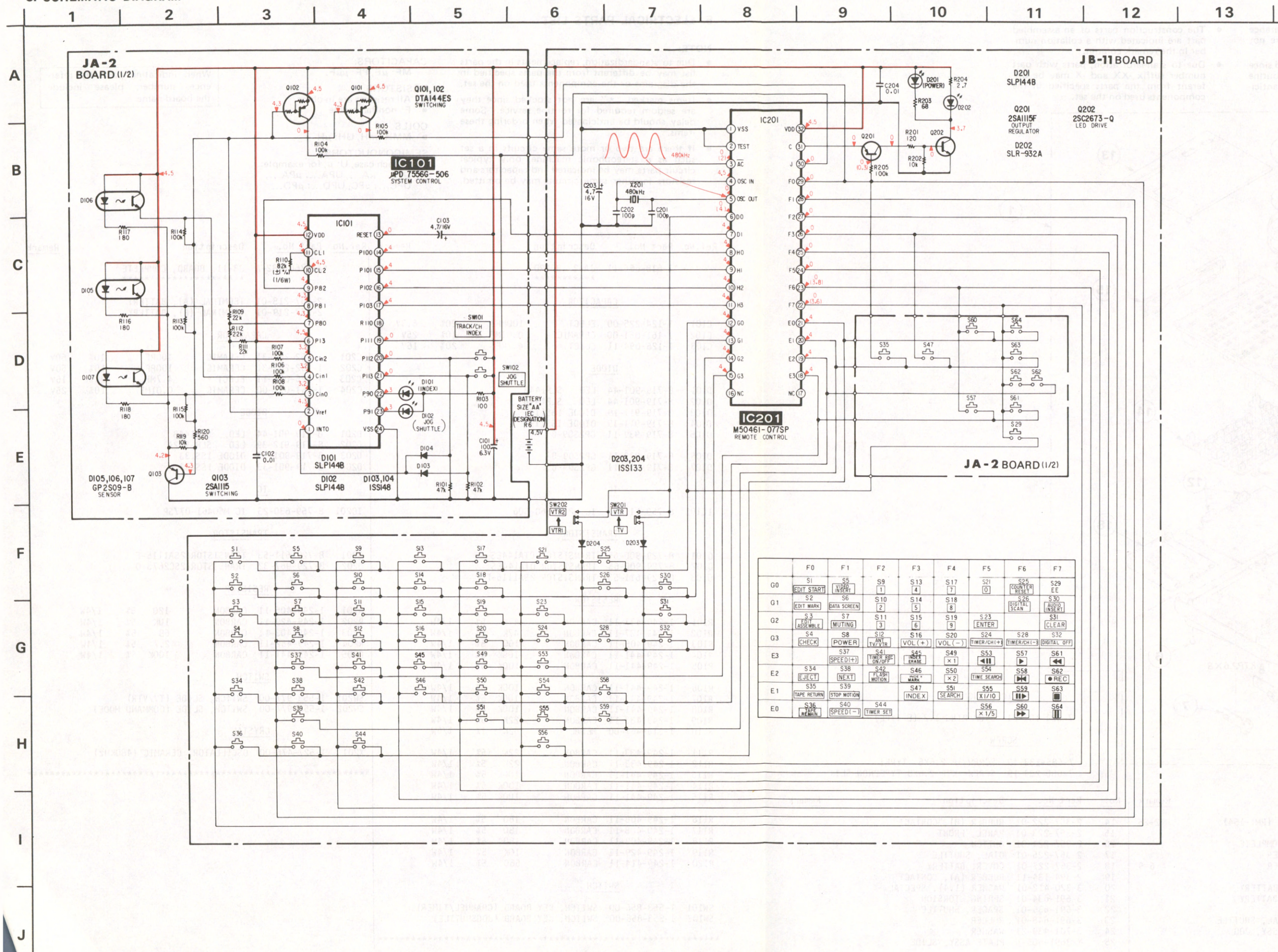
2SA1115-F
DTA144ES



GP2S09-B



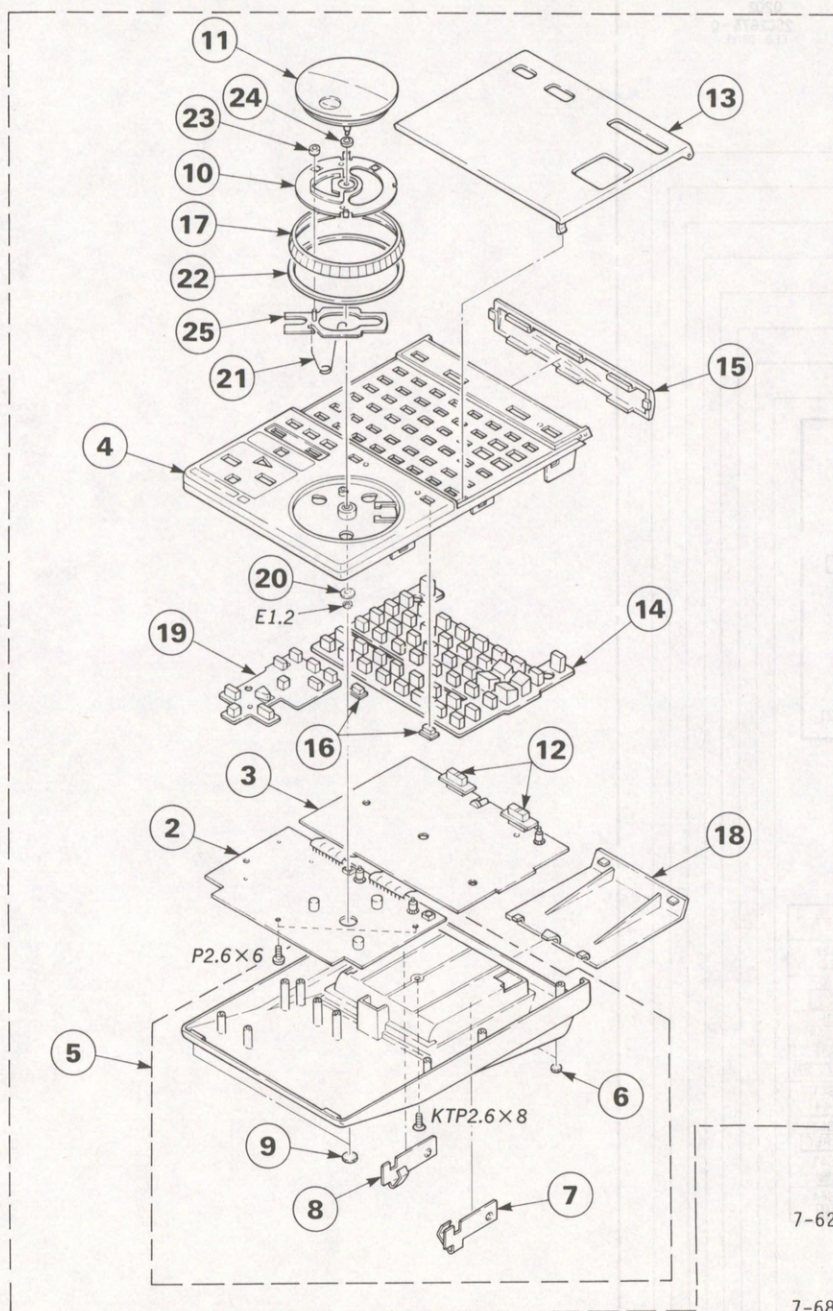
3. SCHEMATIC DIAGRAM



4.EXPLODED VIEW

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.



STOP RING

7-624-101-01 STOP RING 1.2 (E TYPE)

SCREW

7-685-133-19 SCREW +P 2.6X6 TYPE1

7-685-234-19 SCREW +KTP 2.6X8 TYPE2NON-SLIT

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	A-6767-709-A	COMMANDER ASSY (RMT-164)	2-25	14	2-357-222-01	RUBBER (B), CONTACT	
2	*1-618-666-11	JA-2 BOARD		15	2-357-223-01	PANEL, FRONT	
3	*A-6766-282-A	JB-11 BOARD, COMPLETE		16	2-357-224-01	BUTTON	
4	X-2357-270-1	CASE ASSY, UPPER		17	2-357-225-01	DIAL, SHUTTLE	
5	X-2357-215-1	CASE ASSY, LOWER	6-9	18	2-357-227-01	COVER, BATTERY	
6	4-374-469-01	FOOT, RUBBER		19	2-394-134-11	RUBBER (A), CONTACT	
7	2-383-106-00	TERMINAL (D), BATTERY		20	3-320-412-01	WASHER (1.4), SPECIAL	
8	4-350-925-00	TERMINAL (C), BATTERY		21	3-691-634-01	SPRING, TORSION	
9	2-270-305-00	FOOT, RUBBER		22	3-691-635-01	SPACER, SHUTTLE	
10	X-3691-615-1	PLATE ASSY, DIAL, SHUTTLE		23	3-691-648-01	ROLLER	
11	X-3691-672-1	DIAL (R) (N) ASSY, JOG		24	3-701-439-21	WASHER	
12	2-357-217-01	KNOB, SLIDE		25	X-3691-605-1	PLATE ASSY, SLIDE	
13	2-357-221-11	LID, UPPER					

5. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF: μ F, PF: μ F.

RESISTORS

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORS

In each case, U: μ , for example:UA....: μ A...., UPA....: μ PA....,UPC....: μ PC, UPD....: μ PD...

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
	*1-618-666-11	JA-2 BOARD *****			*A-6766-282-A	JB-11 BOARD, COMPLETE *****	
CAPACITOR				CAPACITOR			
C101	1-124-225-00	ELECT	100MF 20% 6.3V	2-357-218-01	TERMINAL (A), BATTERY		
C102	1-161-051-00	CERAMIC	0.01MF 10% 25V	2-357-219-01	TERMINAL (B), BATTERY		
C103	1-126-094-11	ELECT	4.7MF 20% 16V	CAPACITOR			
DIODE				C201	1-162-282-31	CERAMIC	100PF 10% 50V
D101	8-719-901-44	LED SLP144B		C202	1-162-282-31	CERAMIC	100PF 10% 50V
D102	8-719-901-44	LED SLP144B		C203	1-126-094-11	ELECT	4.7MF 20% 16V
D103	8-719-911-19	DIODE 1SS119		C204	1-161-051-00	CERAMIC	0.01MF 10% 25V
D104	8-719-911-19	DIODE 1SS119		DIODE			
D105	8-719-939-11	GP2S09-B		D201	8-719-901-44	LED SLP144B	
D106	8-719-939-11	GP2S09-B		D202	8-719-912-39	LED SLR-932A	
D107	8-719-939-11	GP2S09-B		D203	8-719-901-33	DIODE 1SS133	
IC				D204	8-719-901-33	DIODE 1SS133	
IC101	8-759-111-60	IC UPD7556G-506		IC			
TRANSISTOR				IC201	8-759-630-23	IC M50461-077SP	
Q101	8-729-900-65	TRANSISTOR DTA144ES		TRANSISTOR			
Q102	8-729-900-65	TRANSISTOR DTA144ES		Q201	8-729-611-53	TRANSISTOR 2SA1115-F	
Q103	8-729-611-53	TRANSISTOR 2SA1115-F		Q202	8-729-967-32	TRANSISTOR 2SC2673-Q	
RESISTOR				RESISTOR			
R101	1-249-437-11	CARBON	47K 5% 1/4W	R201	1-249-406-11	CARBON	120 5% 1/4W
R102	1-249-437-11	CARBON	47K 5% 1/4W	R202	1-249-429-11	CARBON	10K 5% 1/4W
R103	1-249-405-11	CARBON	100 5% 1/4W	R203	1-249-403-11	CARBON	68 5% 1/4W
R104	1-249-441-11	CARBON	100K 5% 1/4W	R204	1-249-452-11	CARBON	2.7 5% 1/4W
R105	1-249-441-11	CARBON	100K 5% 1/4W	R205	1-249-441-11	CARBON	100K 5% 1/4W
R106	1-249-441-11	CARBON	100K 5% 1/4W	SWITCH			
R107	1-249-441-11	CARBON	100K 5% 1/4W	SW201	1-553-977-00	SWITCH, SLIDE (TV/VTR)	
R108	1-249-441-11	CARBON	100K 5% 1/4W	SW202	1-553-977-00	SWITCH, SLIDE (COMMAND MODE)	
R109	1-249-433-11	CARBON	22K 5% 1/4W	CRYSTAL			
R110	1-215-467-00	METAL	82K 1% 1/6W	X201	1-527-476-00	OSCILLATOR, CERAMIC (480KHz)	
R111	1-249-433-11	CARBON	22K 5% 1/4W	*****			
R112	1-249-433-11	CARBON	22K 5% 1/4W				
R113	1-249-441-11	CARBON	100K 5% 1/4W				
R114	1-249-441-11	CARBON	100K 5% 1/4W				
R115	1-249-441-11	CARBON	100K 5% 1/4W				
R116	1-249-408-11	CARBON	180 5% 1/4W				
R117	1-249-408-11	CARBON	180 5% 1/4W				
R118	1-249-408-11	CARBON	180 5% 1/4W				
R119	1-249-429-11	CARBON	10K 5% 1/4W				
R120	1-249-414-11	CARBON	560 5% 1/4W				
SWITCH							
SW101	1-553-856-00	SWITCH, KEY BOARD (CHANNEL/TIMER)					
SW102	1-553-856-00	SWITCH, KEY BOARD (JOGSHUTTLE)					
